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ABSTRACT

This module is one of a series of more than 125 performance-based teacher education (PBTE) learning packages focusing upon specific professional competencies of vocational instructors. The competencies upon which these modules are based were identified and verified through research as being important to successful occupational teaching at all levels of instruction. The modules are suitable for the preparation of instructors in all occupational areas. This module is designed to give prospective teachers skill in organizing their classes and laboratories to install competency based education (CBE). It deals with the decision making, planning, and preparation that must be done before students actually arrive to participate in the CBE program. The information and practice activities in this module will assist student teachers in providing two key pieces to the CBE puzzle: a learning environment designed to help individual students achieve competencies, and a realistic system for managing records, assigning grades, and taking in new students. The module consists of a terminal objective, enabling objectives, prerequisites, resources, and four learning experiences. The learning experiences, each based on an enabling objective, contain activities, information, case studies, examples, and feedback. The final learning experience is an actual teaching situation in which the prospective teacher is to organize his/her class and laboratory to install CBE and be assessed by a resource person. (KC)

Organize Your Class and Lab to Install CBE

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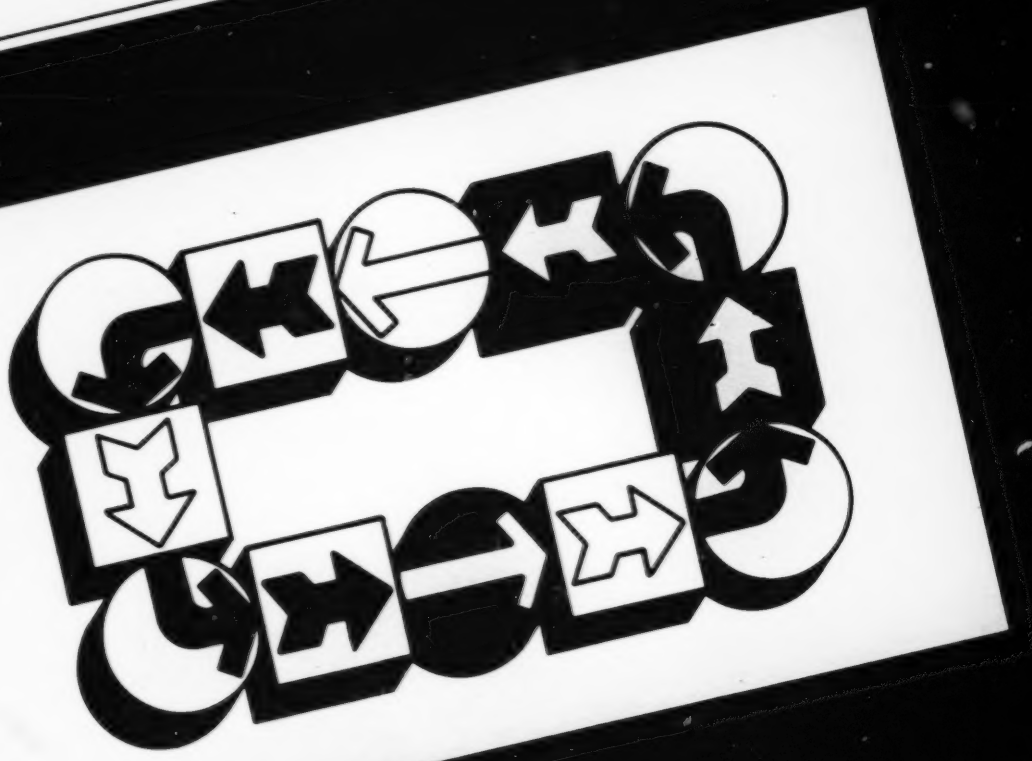

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FOREWORD

This module is one of a series of over 125 performance-based teacher education (PBTE) learning packages focusing upon specific professional competencies of occupational instructors (teachers, trainers). The competencies upon which these modules are based were identified and verified through research as being important to successful occupational teaching at all levels of instruction. The modules are suitable for the preparation of instructors in all occupational areas.

Each module provides learning experiences that integrate theory and application; each culminates with criterion-referenced assessment of the occupational instructor's performance of the specified competency. The materials are designed for use by teachers-in-training working individually or in groups under the direction and with the assistance of teacher educators or others acting as resource persons. Resource persons should be skilled in the teacher competencies being developed and should be thoroughly oriented to PBTE concepts and procedures before using these materials.

The design of the materials provides considerable flexibility for planning and conducting performance-based training programs for preservice and inservice teachers, as well as business-industry-labor trainers, to meet a wide variety of individual needs and interests. The materials are intended for use by local education programs, postsecondary institutions, state departments of education, universities and colleges, and others responsible for the professional development of occupational instructors.

The PBTE curriculum packages in Category K—Implementing Competency-Based Education (CBE)—are designed to enable occupational instructors to install and manage training programs embodying the principles and concepts of CBE. The modules are based upon 84 teacher competencies identified as essential to installing and managing competency-based occupational instructional programs.

Many individuals and institutions have contributed to the research, development, testing, and revision of these significant training materials. Appreciation is extended to the following individuals who, as members of the DACUM analysis panel, assisted National Center staff in the identification of the teacher competency statements upon which this category of modules is based: Odell Chism, Robert Dubanoski, Neil Reske, Bell Nicholson, Robert Rannells, Richard Sedlacek, William Shoaf, Kris Sitler, Michael Strohaber, and Ann Vescio. Appreciation is also extended to the following individuals for their critical reviews of the modules during the development process: Glen E. Fardig, Robert E. Norton, and Roger Harris.

Field testing of the materials was carried out with the assistance of field-site coordinators, teacher educators, students, directors of staff development, and others at the following institutions: DuPage Area Vocational Education Authority Center, Illinois; Indiana University of Pennsylvania; Pennsylvania State University; Seminole Community College, Florida; Trident Technical College, South Carolina; University of Arkansas, Fayetteville; University of Central Florida; University of Pittsburgh, Pennsylvania; University of Southern Maine; and University of Vermont .

Recognition for major individual roles in the development of these materials is extended to the following National Center staff: Lucille Campbell Thrane, Associate Director, Development Division, and James B. Hamilton, Program Director, for leadership and direction of the project; Michael E. Wonacott and C. Lynn Malowney, Program Associates, for module quality control; Cheryl M. Lowry, Research Specialist, and Billie Hooker, Graduate Research Associate, for developing illustration specifications; Barbara Shea for art work; Andonia Simandjuntak, Graduate Research Associate, for assistance in field-test data summarization; and Glen E. Fardig, Consultant, and Lois G. Harrington, Program Associate, for revision of the materials following field testing.

Special recognition is also extended to the staff at AAVIM for their invaluable contributions to the quality of the final printed products, particularly to Marilyn MacMillan for module layout, design, and final art work; and to George W. Smith, Jr. for supervision of the module production process.

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MODULE

K-3

Organize Your Class and Lab to Install CBE

Module K-3 of Category K—Implementing Competency-Based Education (CBE)
PROFESSIONAL TEACHER EDUCATION MODULE SERIES

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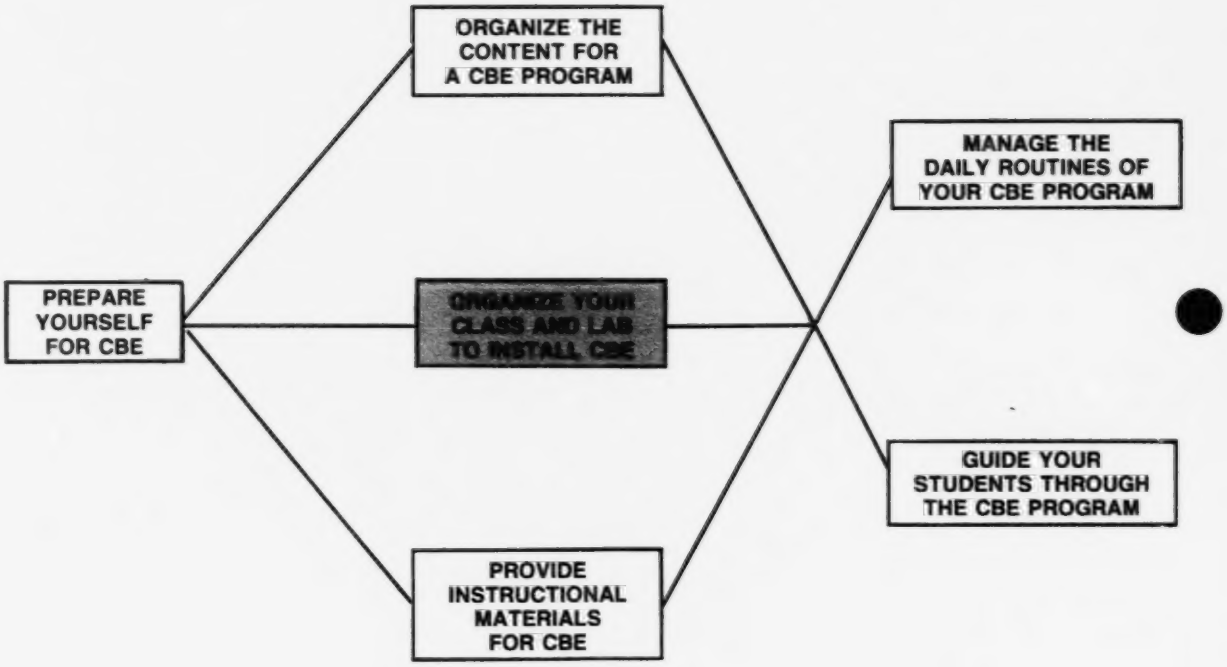

ORGANIZE THE CONTENT FOR A CBE PROGRAM
MANAGE THE DAILY ROUTINES OF YOUR CBE PROGRAM
PREPARE YOURSELF FOR CBE
ORGANIZE YOUR CLASS AND LAB TO INSTALL CBE
GUIDE YOUR STUDENTS THROUGH THE CBE PROGRAM
PROVIDE INSTRUCTIONAL MATERIALS FOR CBE

CBE IMPLEMENTATION PROCESS

INTRODUCTION

To successfully implement competency-based education (CBE), some aspects of vocational-technical programs must be organized and operated somewhat differently than for a more conventional program approach. It is critical to the success of your CBE program that you (1) organize the learning environment for CBE and (2) develop records management, grading, and student entry systems to support the competency-based approach.

A physical learning environment that supports CBE is very important to making the concept work. Since students in a CBE program assume much of the responsibility for their own learning, the organization and management of the classroom, shop, or laboratory must promote efficient and effective learning. The learning environment must provide for more small-group and individualized student **learning** rather than for group **teaching**.

Another key component of any successful CBE program is a practical management system. Systems must be provided for managing records, assigning grades or other appropriate student progress measures, and admitting new students at various times throughout the year. Managing a CBE program need not be more difficult than managing a more conventional one, but it will be different.

This module is designed to give you skill in organizing your class and lab to install CBE. It deals with the decision making, planning, and preparation that must be done before students actually arrive to participate in the CBE program.

The information and practice activities in this module will assist you in providing two key pieces to the CBE puzzle: a learning environment designed to help individual students achieve competencies and a realistic system for managing records, assigning grades, and taking in new students. (See the diagram on p. 2 to understand the relationship of this module to the other modules in Category K.)

You may wish to take this module and Module K-5, *Manage the Daily Routines of Your CBE Program*, at the same time. Both modules contain an activity in which you observe certain aspects of a vocational program and develop a plan to make these aspects more compatible with a CBE approach. It may thus be most efficient to complete these two activities simultaneously.

ABOUT THIS MODULE

Objectives

Terminal Objective: In an actual teaching situation, organize your class and lab to install CBE. Your performance will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 69–71 (*Learning Experience IV*).

Enabling Objectives:

1. After completing the required reading, critique the performance of the teachers described in given case studies in organizing the facilities and securing needed resources for a CBE program (*Learning Experience I*).
2. After completing the required reading, critique the performance of the teachers described in given case studies in establishing systems to administer their CBE programs (*Learning Experience II*).
3. Given the opportunity to observe and rate the physical and administrative aspects of a vocational program, develop a plan for making those aspects more compatible with a CBE approach (*Learning Experience III*).

Prerequisites

The modules in Category K are **not** designed for the prospective teacher with no prior training and/or experience. They assume that you have achieved a minimal level of **content knowledge** in your occupational specialty and **skill** in the core teacher competencies of instructional planning, execution, and evaluation. They then build on or expand that knowledge and skill level, specifically in terms of implementing competency-based education.

In addition, to complete this module, you should have knowledge of the essential elements and desirable characteristics of CBE; and skill in identifying needed instructional resources, arranging for facilities improvements, and organizing the shop or lab. If you do not already meet these requirements, meet with your resource person to determine what method you will use to do so. One option is to complete the information and practice activities in the following modules:

- *Prepare Yourself for CBE*, Module K-1
- *Project Instructional Resource Needs*, Module E-1
- *Arrange for Improvement of Your Vocational Facilities*, Module E-3
- *Organize the Vocational Laboratory*, Module E-8

Resources

A list of the outside resources that supplement those contained within the module follows. Check with your resource person (1) to determine the availability and the location of these resources, (2) to locate additional references in your occupational specialty, and (3) to get assistance in setting up activities with peers or observations of skilled teachers, if necessary. Your resource person may also be contacted if you have any difficulty with directions or in assessing your progress at any time.

Learning Experience I

Optional

Slide presentation: "The Resource Center Layout." Charlottetown, Prince Edward Island, Canada: Holland College, Charlottetown Center, Clearinghouse.

Slide equipment to use in viewing a slide presentation.

A resource center in an operating CBE program that you can observe.

Learning Experience II

No outside resources

Learning Experience III

Required

A vocational program in your occupational specialty that you can visit to observe and rate its physical and administrative aspects.

A resource person to evaluate your competency in developing a plan for making the physical and administrative aspects of a vocational program more compatible with CBE.

Learning Experience IV

Required

An actual teaching situation in which you can organize your class and lab to install CBE.

A resource person to assess your competency in organizing your class and lab to install CBE.

General Information

For information about the general organization of each performance-based teacher education (PBTE) module, general procedures for its use, and terminology that is common to all the modules, see About Using the National Center's PBTE Modules on the inside back cover. For more in-depth information on how to use the modules in teacher/trainer education programs, you may wish to refer to three related documents:

The *Student Guide to Using Performance-Based Teacher Education Materials* is designed to help orient preservice and inservice teachers and occupational trainers to PBTE in general and to the PBTE materials.

The *Resource Person Guide to Using Performance-Based Teacher Education Materials* can help prospective resource persons to guide and assist preservice and inservice teachers and occupational trainers in the development of professional teaching competencies through use of the PBTE modules. It also includes lists of all the module competencies, as well as a listing of the supplementary resources and the addresses where they can be obtained.

The *Guide to the Implementation of Performance-Based Teacher Education* is designed to help those who will administer the PBTE program. It contains answers to implementation questions, possible solutions to problems, and alternative courses of action.

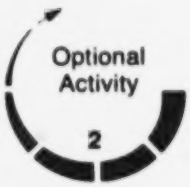
NOTES

Learning Experience I

OVERVIEW

After completing the required reading, critique the performance of the teachers described in given case studies in organizing the facilities and securing needed resources for a CBE program.

You will be reading the information sheet, Organizing the Learning Environment for CBE, pp. 8–24.



You may wish to view the slide presentation, "The Resource Center Layout," produced by Holland College.

You may wish to visit an operating CBE program to observe that program's resource center.

You will be reading the Case Studies, pp. 26–28, and critiquing the performance of the teachers described.

You will be evaluating your competency in critiquing the teachers' performance in organizing the facilities and securing needed resources for a CBE program by comparing your completed critiques with the Model Critiques, pp. 29–30.

You are probably familiar with conventional vocational-technical facilities—the environments in which instructors provide instruction to students. For information on the kind of learning environment you should provide for students in a CBE program, read the following information sheet.

ORGANIZING THE LEARNING ENVIRONMENT FOR CBE

In a competency-based education (CBE) program, the physical learning environment should be organized and managed differently than in a more conventional vocational-technical program. Let's take a look at some reasons why.

Sample 1 lists some basic differences between these two approaches. While the statements in sample 1 may make the contrast more distinct than would actually be the case in most programs, the point is the same: CBE places some requirements on the physical facility that a conventional approach does not.

In conventional programs, instructors generally provide instruction on a topic to a **whole class**. Usually, the instructor personally presents most of the instruction—using training devices, media, or other teaching aids—while the students sit or stand, watch or listen, more or less passively. Typically, the students then practice what was demonstrated, often in groups of two or more.

In CBE programs, the focus is more on providing **individuals** or **small groups** of students with high-quality learning materials that provide the major part of the routine instruction on an individualized basis. The instructor manages the learning process—providing motivation, asking and answering questions, giving minilectures and minidemonstrations, checking progress, and providing feedback.

In CBE it is not often that the entire class is brought together to receive the same routine instruction on a new competency. Usually, different students will be working on different competencies on any given day, because one or more of the following factors will be at work:

- If the program includes an open-entry/open-exit feature, students may enter at different times throughout the year. A student who begins in August and one who begins in December would probably not be working on the same competency in March.
- There may be multiple starting points in the program. Three auto mechanics students might begin working in three different areas. The first could start on brakes, the second on engine overhaul, and the third on the electrical system. Hence, the three students would not likely ever be working on the same competency at the same time.
- All students may not have the same training goal even within the same program. In a textiles program, one student might want to become a custom drapery maker, while another wants to become a more general home furnishings worker. These two students, then, would not be working to achieve the exact same set of competencies.
- Students continue working on a competency until they can perform it successfully. All students in a program may well begin to work on competency 1 on the same day. If, however, each individual student is given sufficient learning time to perform the competency successfully, few will finish at exactly the same time. Thus, they will not all be ready to begin competency 2 at the same time.
- Students with special/exceptional needs (e.g., physically or mentally handicapped) might be working on a specially selected sequence of competencies—ones that fit their particular abilities and needs. Their individual programs and pace may be quite different from those of others in the group.

In some CBE programs, all five of these factors may apply—in others two or three. Even if only one of these factors applies in your CBE program, you will soon be faced with the need to accommodate students who are working on different competencies. Having a wide variety of different learning activities going on simultaneously need not be a problem, however, if the learning environment is carefully organized to support CBE.

SAMPLE 1

DIFFERENCES BETWEEN CBE AND CONVENTIONAL APPROACHES

Conventional	CBE
1. Many students are working on the same task at the same time.	1. On a typical day, students may be working on several different tasks requiring different materials, resources, and spaces.
2. The entire class usually takes written tests as a group.	2. Usually, an individual student or a small group takes self-checks when ready, requiring a separate, quiet, and secure area.
3. Theory is usually covered in a classroom with the total group.	3. Theory is usually integrated directly into the individualized student learning materials for learning tasks, requiring individual study space.
4. Usually, the instructor has to prepare the teaching aids, consumable supplies, learning materials, and other resources for a single lesson on any given day.	4. The instructor must make available to students the learning resources needed to receive instruction in and to practice several tasks on any given day.
5. The instructor is the primary user of instructional media (e.g., overhead or 16mm projector).	5. Individual students set up and use instructional media (e.g., slide/tapes, filmstrips, videotapes), requiring booths, carrels, or tables; and storage areas for hardware and software.
6. Most students take performance tests in pairs or small groups at approximately the same time.	6. Each individual student can take each performance test when he or she is ready.
7. When testing of a topic or unit is complete, the group usually moves on to the next topic.	7. A student can work on a task as necessary to reach competence. He/she may need to use the required learning resources and work stations for more or less time than other students.
8. The instructor provides extra assignments or responsibilities for students who complete the unit before the rest of the group.	8. Students start working on a new competency as soon as they have successfully achieved the preceding one.

Expanding Your Facilities

As you organize your initial competency list for instructional purposes, you examine each competency to determine how and **where** it will be taught. There are several factors to consider as you review each competency statement.

The first factor relates to **facilities**. Does your program now have (or can it get) the proper—and properly equipped—facilities to permit students to achieve the competency? The second relates to **your own expertise**. Are you skilled in each of the competencies your students are expected to achieve? In some or many cases, the answer to both these questions will be yes.

However, it may be that a particular competency involves a very expensive piece of equipment (e.g., a numerically controlled milling machine in a machine shop program). And it may be that you have no hope of acquiring that equipment within the limits of your institution's resources. Or space, rather than expense, may be the problem, as in an aeronautic drafting program in which training in lofting requires a great open floor area.

Furthermore, as technical procedures in industry become more complex, there may be some unusual or specialized skills that you have simply not as yet acquired. You may not have skill in some of the latest techniques, especially if you have not been employed in the occupation for a number of years.

It can be a challenge for instructors to keep up with new technological developments in some areas. For example, in auto mechanics, there are whole new computer-controlled ignition and fuel injection systems.

If it can't be taught in the school or by the instructor, then how can students be given the opportunity for the needed training and experience? Sometimes the answer to that question demands clever and creative thinking. It may also mean some extra work and devotion. Some of these problems suggest their own solutions.

If a competency involves a piece of equipment that you don't have in your lab, then the obvious answer is to get it. This may not be as flippant as it sounds. You have a powerful tool in your verified occupational task list.

Your administration, for example, may listen to your request for special facilities far more closely. Using the competency list as documentation, you can show that (1) the occupation expects entry-level employees to possess a specific competency and (2) the only way your students can achieve that competency is to have access to the needed equipment.

Business or industrial benefactors, too, may be far more interested in contributing dollars or equipment to teach a skill that they themselves have specified as being important. The request can't be dismissed as being some personal interest or idiosyncracy on the part of the instructor.

Another tactic is to borrow the needed equipment from an industrial source, either by actually moving it into your lab or by being given time for you and your students to use it on site. For example, word processing equipment might be acquired on loan from a local distributor. Or students could get experience in lubricating a mine locomotive at the mine site, during specially arranged times.

Competencies that are beyond the present limit of your expertise can be dealt with by identifying outside experts to help. When one or more students are ready to work on the competency, an outside expert from business or industry could be asked in to serve as resource person and to assess students' performance.

This would allow students to work on the competency now, while giving you time to acquire the skill you need to serve as resource person for that competency yourself. Again, business and industrial firms are more likely to contribute the time of an employee if you have a CBE program they themselves have helped to establish and organize.

There is an additional solution concerning what to do with competencies that would be difficult or impossible to include in the in-school program. CBE lends itself to learning in field settings. Thus, many of these hard-to-include competencies can be "farmed out," as it were.

You can arrange special short-term field training experiences for students needing to acquire certain individual competencies. Or you can group a number of competencies together for inclusion in a longer field experience that becomes a regular feature of he program.

For example, a student could work on a competency up through the simulation level in the school setting. Then he or she could be sent out on the job to practice the competency using the actual equipment. While on the job, the student would be supervised and assessed by an on-the-job supervisor.

Remember, in a CBE program, the concern is not where learning takes place or who does the teaching. The important thing is that the student does in fact acquire the necessary competencies.

Identifying Learning Resources Needed

One of the first steps in organizing the in-school learning environment for CBE is to identify all the specific tools, equipment, instruments, supplies, materials, and related learning resources needed. You should already know the general principles and basic procedures for laying out, equipping, and supplying a vocational-technical lab. The question then becomes one of how this step is carried out differently for a CBE program than for a conventional one.

You should keep the following two important principles in mind when identifying the learning resources needed for a CBE program:

- Selection of learning resources in a CBE program is based solely on the program competencies. Competencies to be achieved by students should dictate the learning resources needed—**not** the reverse. In other words, available learning resources should not be allowed to dictate the competencies to be achieved.
- In a CBE program, there is no need to provide one piece of equipment, tool, instrument, or other resource per student.

Let's look at these two principles and how each affects the identification of the learning resources needed for a CBE program.

Resources Based on Competencies

The instructional content of a CBE program is based on a list of competencies that have been verified as **essential** for entry-level employment in the occupation for which students are being trained. Therefore, these competencies must determine what learning resources are needed.

If, for example, expert workers have verified the competency, *Set a bathtub,* as being essential for plumbing students, then a bathtub must be made available for students to achieve this competency. Likewise, there is no way students can learn how to dehorn cattle without access to real cattle and the tools needed.

There are many advantages to basing your selection of learning resources on precisely stated occupational competencies. First, as you consider each individual competency, you can easily identify—and make note of—all the essential learning resources for achieving that competency. Incidentally, by identifying only essentials—each tied to a specific competency—you may be able to reduce the amount of money required to equip the laboratory.

In addition, as previously mentioned, this approach to selecting resources allows you to present a more solid rationale to support the need for additional equipment and other materials. Expert workers from the local community have identified and verified these competencies as being needed by students to enter the occupation. Your administration is likely to feel that is a valid reason for allocating money to add the learning resources needed for students to achieve those competencies.

Finally, it is much easier to make sound decisions about existing or donated learning resources. You may well, at some time, have learning resources that are surplus, outdated, or of questionable value in some other respect. Or a firm might offer to donate some resource. You can easily decide whether you should keep or accept such resources by simply consulting your program competency listing.

If, for example, none of the competencies require the use of a slide rule, you can feel safe in discarding your old slide rule demonstrator. If, on the other hand, *Type on a memory typewriter* appears on your competency listing, you can feel certain that you should consider that offer for a donated memory typewriter.

Less Need for Duplicate Resources

In conventional vocational-technical programs, all students usually work on the same task at the same time. Therefore, it is necessary to purchase enough duplicate learning resources so that each student (or small group) has his or her own personal tool, instrument, device, or other learning resource.

It's not unusual to look in on a conventional electronics program, for example, and see ten pairs of students working at ten lab stations—each identically equipped. There might be ten oscilloscopes, ten multi-meters, and ten lab trainers. You might look in on this same program at other times, however (particularly when theory is being covered in the classroom), and see those same ten lab stations sitting idle.

And problems may arise in conventional programs when there are only enough funds to purchase **one** expensive tool or piece of equipment. For example, a nursing program might be able to buy only one steam autoclave. The initial instruction would be no problem. The twelve students in the class could, as a group, watch an instructor demonstration of how to use the autoclave to sterilize surgical instruments.

But what happens when the students are ready to practice using the equipment themselves? As each individual student takes a turn at operating the autoclave, what do the other eleven do? They could stand around and wait, but that would be a waste of valuable time.

If, however, other activities are provided to keep them productively engaged, there is a danger that some of the initial motivation provided by the demonstration will be lost. Worse, they may have forgotten some of what they learned from the demonstration—such as key safety precautions—by the time they get a chance to use the equipment.

In a CBE program, on the other hand, the entire group of students will not likely be working on the same competency at the same time. Therefore, there is no longer a need to provide one set of learning resources for each individual or small group of students. For example, if the electronics program previously mentioned were competency-based, four oscilloscopes, five multi-meters, and four lab trainers might be sufficient—a substantial savings.

Sample 2 shows a form that might be helpful to use as you identify the learning resources needed for the specific competencies on which your CBE program is based. You will notice that the form is designed to identify the special tools, equipment, and supplies that **one** student would need in order to achieve the competency with an average amount of practice and an average number of attempts at the performance test.

You need to keep the following thoughts in mind as you use such a form to identify the overall resources you will need for your entire program:

- Any resource that is consumed or worn out during use must be provided in sufficient quantity to allow each individual student to practice until he or she can successfully perform the competency. This includes such resources as cloth, plywood, flour, typing paper, and so on. The total quantity needed for each consumable item can be determined by multiplying the quantity required for one student by the number of students.
- You may only need to provide one of any highly specialized tool, instrument, or piece of equipment (e.g., special wrench, a special fixture) that will be used for a single competency or a very limited number of competencies.
- You need to provide several duplicates of pieces of equipment and tools that are used almost daily (e.g., hammer or sewing machines). However, don't provide too many duplicates; remember, students will usually be working on different competencies at any one time.
- To ensure that you don't overlook any of the learning resources needed for students to achieve a particular competency, you need to fully analyze each competency from start to finish.

SAMPLE 2

LEARNING RESOURCES IDENTIFICATION FORM

Institution_____ Program/Course_____

Listed below are the resources needed for one student to master each task with an average amount of practice and performance test attempts:

Task No.	Task/ Competency	Special Tools	Equipment	Supplies
C14	Qualify with handgun	Ear protection	Assigned weapon Firing range	Ammunition (500 rounds) Targets (25)
F06	Replace universal joints		Hoist or lift	Replacement u-joints (3)
#24	Paste up mechanical		Light table	Mechanical (1) Layout sheet (1) Typeset copy-selection
No. 119	Polish metal with grinder		Grinder Polishing wheel	Workpiece (2) Compound
D–07	Clean brick walls	Brush		Acid solution (5 gal.) Water
#10–12	Pleat draperies	Gauge	Sewing machine	Pins Thread Draperies (2 sets)
E–011	Apply chemicals using handsprayer	Mask	Handsprayer	Chemicals (2 types) Water
101–02	Take temperature orally	Oral thermometer		Alcohol Cotton

Organizing the Physical Facility for CBE

Not only must the identification of learning resources be handled a little differently for a CBE program, but the layout and organization of learning resources within the facility must be approached somewhat differently as well. Since very few instructors will have the opportunity to participate in designing a new facility or in making major modifications to their present building, we will focus on changes that can be made in the layout and use of **existing** facilities. Many of these changes are minor and inexpensive—but very important in making the CBE program operate smoothly.

Typical Facility Layout

Let's begin by looking at the layout of a classroom and lab (or shop) as it might appear in many conventional programs. Sample 3 shows a vocational-technical facility that is arranged for a conventional, time-based, group-oriented approach to teaching. While the drawing most clearly relates to trade and industrial shops, such layouts are equally likely in health occupations, cosmetology, agriculture, and other areas.

As you take a moment to look at this arrangement of materials, equipment, furniture, and related resources, consider the following:

- The classroom and lab have been set up as two separate, distinct areas, each for a different purpose.
- Virtually all the teaching of facts, background information, concepts, and theory (i.e., cognitive activities) occurs in the classroom. The instructor is often at the front of the room, using the overhead projector, 16mm film projector, chalkboard, and other training aids to teach the required content.
- While in the classroom, students typically spend a considerable part of the time passively sitting and listening. The instructor is active and moves around, while students move about very little.
- Hands-on skills are taught in the classroom or lab through instructor demonstrations or media presentations. During demonstrations, students gather around while the instructor performs and explains each step.
- All hands-on practice occurs in the lab, with students working independently or in groups of two.
- Students move from the classroom to the lab and back again as a **group**. A typical schedule might involve two hours of theory every morning in the classroom and four hours of hands-on work in the lab every afternoon. Or theory might be taught all day on Tuesdays and Thursdays, with lab work on Mondays and Wednesdays, and project work on Fridays. Such schedules usually specify distinct time slots for the group to use the classroom and lab.
- The classroom is mostly idle while students are in the lab working, and the lab goes completely unused at times when students are in the classroom.
- Students usually do written work and take written tests as a total group, while seated in the classroom.
- No specific areas within the lab are set up for practicing particular skills. Most likely, students find an available spot; assemble all the needed tools, supplies, and equipment; and return them all when finished.

Of course, the previous layout represents only a hypothetical arrangement of a classroom and lab for a typical vocational-technical program. It was included to call your attention to the problems that may be created by the conventional arrangement of the learning environment when installing CBE. Specifically, some of these problems include the following:

- Space is inefficiently utilized. The classroom and lab each sit empty half the time or more.
- This arrangement promotes instructor-centered, group-paced instruction.
- Students are somewhat restricted in their movement, especially in the classroom area.
- Hands-on achievement of competencies is artificially separated from acquisition of the concepts and facts supporting those competencies. Theory is covered in the classroom, skills are taught in the lab, and the two aspects of learning are often separated by days or weeks.
- Many times, students demonstrate their achievement of a competency by performing it as a group. It is not uncommon to see an entire class split into two or three groups, with each **group** determining elevation with a transit, transplanting seedlings, making doughnuts, or performing some other project, experiment, or live-work assignment.

  No doubt, each student learns something from such group activities. However, there is no way to be certain whether each **individual** can in fact successfully perform the competency in question.
- Since instructional media is usually not set up for repeated individual use, media may be used sporadically, not at all, at inappropriate times, or just because it's available (or all of the above).

Facility Rearranged for CBE

As you can see, if the competency-based approach is to work smoothly, the more conventional layout and use of the learning environment just do not work very well. How might that facility be rearranged to support CBE? Sample 4 shows the same facility with the desk, chairs, equipment, benches, and other resources rearranged, but little structural remodeling has been done. Let's look more closely at the changes that have been made and how they affect the usefulness of the facility for CBE.

In the modified plan, the classroom and lab are no longer each laid out to be used exclusively for only one kind of activity. No longer is the classroom arranged only for lectures and demonstrations. No longer is the lab arranged only for hands-on activities. Notice that several workbenches have been moved into the classroom so that students can learn about selected "clean" competencies and practice those competencies—all in the same spot.

For example, a student could view a slide/tape presentation on how to cut and join plastic pipe while seated at one of the workbenches in the classroom (or in the lab). He or she could then actually practice cutting and joining pipe while at that same location—under the instructor's supervision, of course. Finally, the student could take a performance test on that competency at the same location.

Notice the increase in devices for storing and using learning packages and supporting media. There is a file for learning packages. There is a cabinet for audiovisual materials, and one for projectors and headphones. All software is labeled for easy identification and stored in an accessible place.

Ample provision is made for student use of audiovisual materials. Some audiovisual equipment is permanently located at selected stations in the classroom and lab, some is placed on rollaway carts, and some is stored in cabinets. All this allows students easy access to the learning materials and supporting media needed to achieve the program competencies.

The program competency listing is posted prominently. When a student successfully completes a learning package and successfully demonstrates a specific competency, he or she can refer to that sequenced listing, determine which competency to work on next, locate the learning package for that competency, and go to work. The instructor, of course, can assist as needed in this process.

Students have a great deal of freedom of movement within the facility. They can move around from place to place as their learning needs dictate.

Several "quiet spots"—tables separated by partitions—are provided in the classroom. Thus, when a learning package calls for reading or written work, the student can find an appropriate place to complete those activities.

The facility is arranged so that different work stations can be set up for learning different tasks. Each learning package, for example, could direct the student to the particular station where he or she would find most of the specialized learning materials needed for performing the particular task he/she is working on.

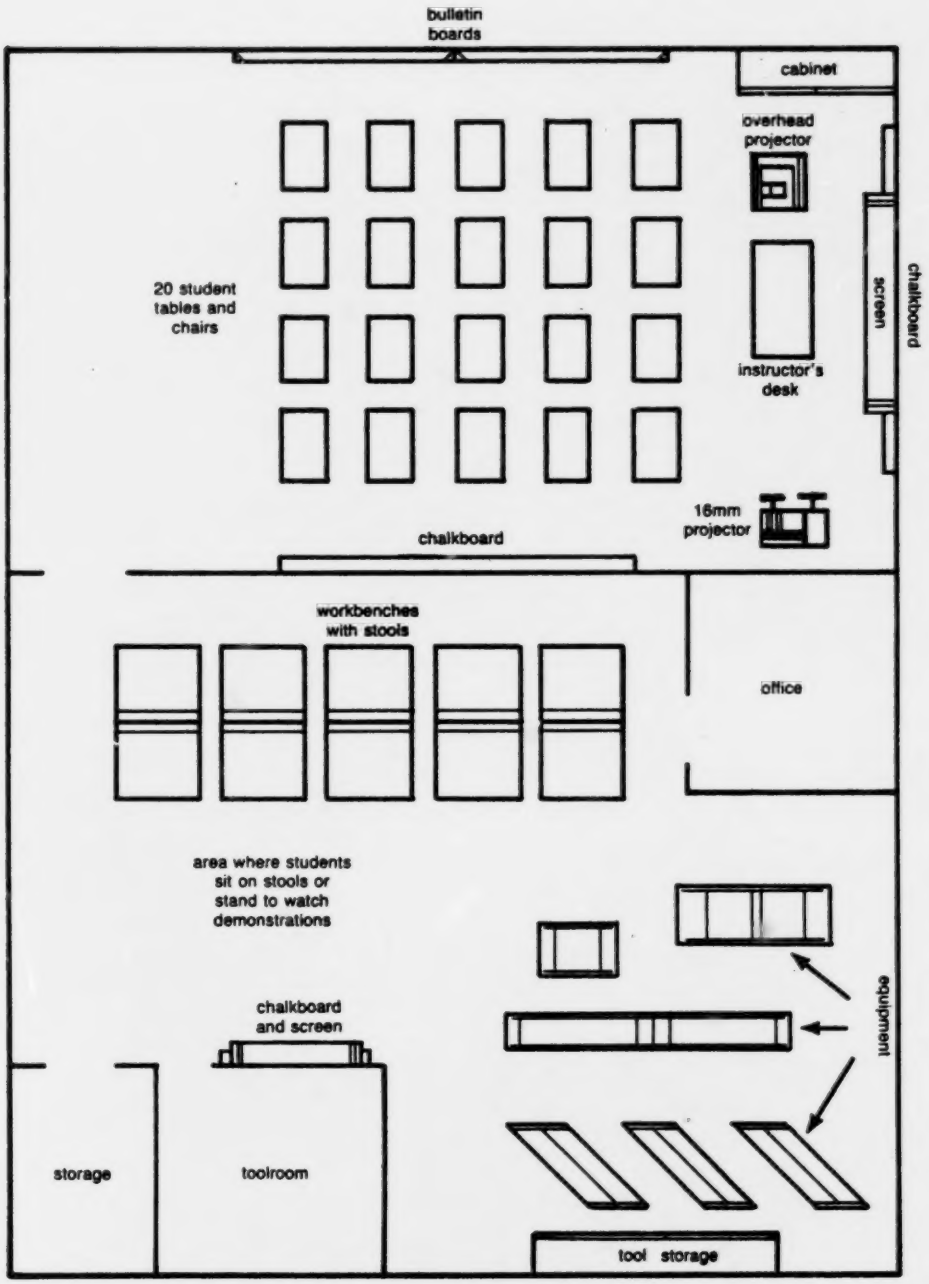
There are tables, separated by a partition, where students can complete self-checks. A nearby file cabinet is provided for storing the self-checks and model answers. If appropriate, the file cabinet could be kept locked.

Some of the classroom tables have been covered with plywood to protect them while being used as work stations.

The arrangement of the facility allows great flexibility in use. On any given day, there may be some students working in the classroom and others working in the lab. The overall arrangement of the learning environment seems to promote activity-oriented, student-directed, self-paced learning.

SAMPLE 3

TYPICAL FACILITY LAYOUT



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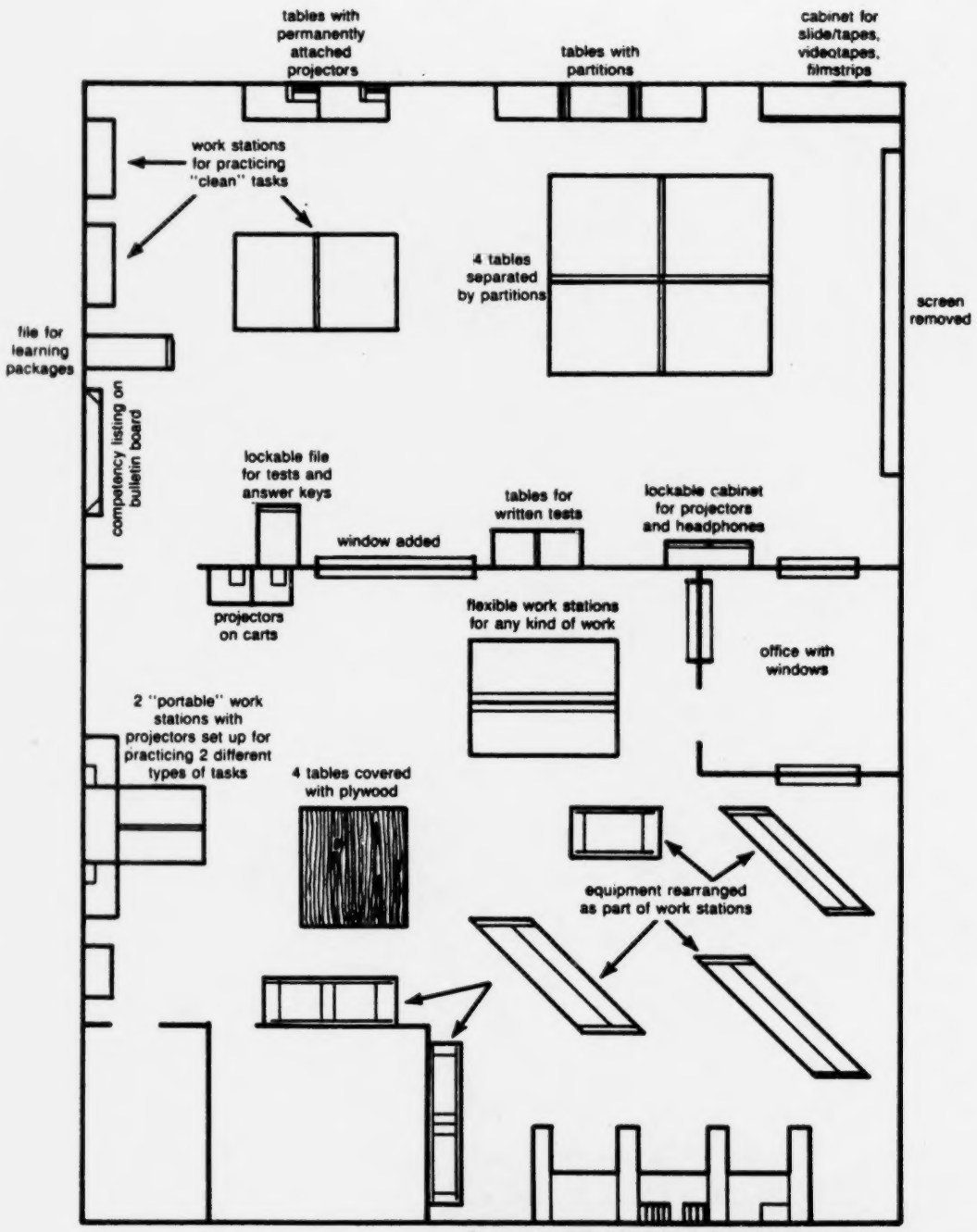
SAMPLE 4

FACILITY REARRANGED FOR CBE


tables with permanently attached projectors
tables with partitions
cabinet for slide/tapes, videotapes, filmstrips
work stations for practicing "clean" tasks
4 tables separated by partitions
screen removed
file for learning packages
competency listing on bulletin board
lockable file for tests and answer keys
tables for written tests
lockable cabinet for projectors and headphones
window added
projectors on carts
flexible work stations for any kind of work
office with windows
2 "portable" work stations with projectors set up for practicing 2 different types of tasks
4 tables covered with plywood
equipment rearranged as part of work stations

3 permanent work stations for viewing media about and then practicing 3 distinct kinds of competencies; included are all needed tools, manuals, etc., in lockable cabinets

Plans for Changing Your Facilities

The way in which you go about rearranging your facilities to support CBE will depend somewhat on your occupational program, its location, its level, and other local requirements. However, there are some general guidelines that can be helpful to you in this process.

Most important, you must carefully **plan** any changes you intend to make before you make them. Sketch your existing facility, and plan—on paper—several possible layouts. Seek the advice of your students, fellow teachers, administrator or supervisor, or others who might be able to help. Visit other sites where CBE has been successfully implemented, and note what changes were made in the facility.

As you develop your plan, you must keep the program competency list in mind. Examine each tentative layout, and make sure you have provided areas for students to work on all the competencies listed.

You may want to consider developing your plan in phases. The first phase might involve the rearrangement of desks, chairs, tables, cabinets, and similar items. A later phase could entail opening a new doorway, closing off a window, changing power or plumbing, or making other more substantive changes.

Regardless of how you arrange your facility, try to provide areas where students can do the following:

- Receive instruction using media, books, instruction sheets, reference material, or other appropriate means
- Practice or apply what they have learned (both knowledge and skill)
- Obtain immediate feedback on the success of that practice (e.g., by looking at answer keys/model answers or having you check their work)
- Demonstrate achievement of program competencies through performance tests (or written tests if these should be appropriate to your occupational area)

As part of your plan, you also need to ensure that you will be able to monitor the classroom, lab, outside work area, or other physical areas where students might be working. A raised platform, centrally located, might work. Adding a few new windows or removing a wall (if feasible) could help. In some cases, restricting certain hazardous activities to specific times and places might be necessary.

If appropriate, you can designate specific work areas or stations for working on specific competencies. For example, a particular instructional package might direct the student to training station C for working on competency 24, *Alter a pattern for a customer.*

At station C, the student would find—in a cabinet, workbench, or other suitable storage area—various patterns, measuring tapes, pins, and all the resources needed to work on that competency (and any other competencies assigned to station C).

In addition, the station would be set up so the student could complete any required learning activities: viewing media with a rear-screen slide projector, completing reading assignments, answering questions, solving alteration problems, and actually practicing altering patterns.

Whenever possible, you should **adapt** existing equipment, furniture, and related resources. You can move tables and desks around, separate desks with partitions, or move furniture against a wall. You might create a room divider out of bookshelves and move portable or power equipment to appropriate stations. Be flexible; rearrange things if bottlenecks occur, space is unused or used unproductively, or other problems occur.

Organizing a Learning Resource Center

You will not be the primary source of routine instruction in a CBE program; other learning resources will. This is where the resource center comes in. A resource center—sometimes called a learning resource center (LRC)—is an area where students can go individually or in small groups to work on cognitive activities related to program competencies. Of course, you will still be involved in presenting instruction, especially when a student needs further explanation or clarification beyond that available in the resource center.

Where to Locate the Resource Center

There is no one set of guidelines for all programs to follow in deciding where to locate a resource center. Different programs will have somewhat different needs. Whether you locate your resource center within your present classroom or lab, use a room nearby, or make some other arrangements, you should keep in mind the following desirable characteristics of a resource center:

- It can be set up and equipped with a minimum of expense, effort, and disruption to your present students.
- It makes full use of already-existing space, furniture, electrical outlets, audiovisual equipment, shelves, cabinets, and other items.
- It is located as close as possible to the program it will serve in order to reduce the time and effort it takes students to get to and from the center.
- It can be locked or otherwise secured to reduce theft or unauthorized use.
- It can be monitored (e.g., by you, a proctor, an aide, or another responsible person) without having to leave the classroom or lab area.
- It is organized efficiently (i.e., students' time, while there, is spent productively, with a minimum of lost motion and unnecessary waiting).
- It is organized effectively (i.e., students engage in learning activities that help them master the program competencies).
- Its learning resources and materials are located in easily accessible places and are clearly marked so they can be quickly located and later returned to the right place.
- It is set up so that many students can use it at the same time without interfering with one another's learning.
- It is flexible (i.e., it can accommodate a wide variety of learning activities, such as reading, viewing, writing, discussing, questioning, practicing, and so on).

Generally, resource centers are created in one of four ways: (1) an entire existing classroom is converted to a resource center, (2) a portion of an existing classroom is converted, (3) a centralized resource center is created for a building, department, or entire school, or (4) a portion of an existing shop or lab is converted. Each of these options has both advantages and disadvantages (see sample 5). You need to select the option most appropriate for your institution and your students.

What to Put in the Resource Center

The contents of the resource center will vary greatly from program to program, just as the location will. However, the following items are typically found in most resource centers operating in successful CBE programs.

Audiovisual equipment. Slide projectors, videotape players, filmstrip viewers, cassette recorders, and a host of similar equipment will generally be found in a CBE resource center. The equipment used most often may be permanently or semipermanently mounted in place. Equipment used less often may be kept in cabinets and set up by a student as needed.

Usually, this equipment is of the type designed for individual or small-group use (e.g., rear-screen projectors, portable screens). In addition, headphones are often provided to reduce distractions.

Learning carrels. Usually, carrels or other similar stations are provided for viewing media, completing reading assignments and written self-checks, working on projects, and so on. Carrels can range from very attractive, commercially available models to a homemade version created using tables or benches separated by plywood panels. A carpentry or woodworking program in your school or college may be able to build very functional carrels at minimal cost.

Audiovisual materials. The audiovisual materials provided may include cassette tapes, slides, filmstrips, videotapes, and so on. Typically, these materials are clearly labeled and then stored in file

SAMPLE 5

ADVANTAGES AND DISADVANTAGES OF RESOURCE CENTER LOCATIONS

Location	Advantages	Disadvantages
Convert the entire existing classroom.	A lot of space is available. Several walls are available for power, carrels, cabinets, or other uses. Resource center is isolated from lab noise, fumes, dust, or other distractors. Very little time is lost going back and forth from resource center to lab. Otherwise-little-used classroom space gets full use throughout the day. Program instructor can easily monitor students—providing clarification, answering questions, or giving feedback.	Students may have to view or read instructional material in the resource center and remember what they saw or read while they proceed to lab for practice. There may not be a window between the classroom and lab. It may be difficult to use that classroom for large-group instruction, which may be needed for night programs, weekend community use, and so on. Some minor (additional outlets) or major (added doorway) alterations may be needed.
Convert a portion of the existing classroom.	Some areas are still available for any group instruction necessary during transition to CBE. Additional areas within classroom can be converted later as needed. There is less disruption of the ongoing routine. Program instructor can easily monitor students—providing clarification, answering questions, or giving feedback.	Less space is available for resource center. Some distractions may occur between resource center area and group-instruction area. Remaining group-instruction area may encourage large-group instruction and may slow shift to CBE.
Provide a centralized resource center for a building, department, or entire school.	Resource center can usually be staffed full-time by student assistant, clerk, aide, librarian, or other personnel. Better utilization of audiovisual equipment and carrels can result, since several programs will be using resource center. Can be set up in existing area designed for this use (e.g., library, media center, or learning lab). Chances of losing slides, learning packages, or other materials is reduced.	Students must travel to and from resource center each time it is used, which may create problems (lost time, need to go out in inclement weather, and the like). Receiving instruction and performing actual hands-on practice become separated considerably in time and distance. Specialized audiovisual equipment used in one program may not be available in central location. Program instructor is not readily available to monitor students, provide clarification, answer questions, or give feedback.
Convert a portion of the existing lab area.	Presentation of instruction and hands-on practice can occur in the same place at nearly the same time. Program instructor can easily monitor students—providing clarification, answering questions, or giving feedback.	Dust, fumes, or sparks may damage audiovisual equipment. Noise in lab may interfere with reading, listening, or other "quiet" work. There may be no available space in the present lab area for a resource center.

boxes or cabinets, or on shelves. A suitable storage area is one where students can easily locate the specific material they need and return it to the proper place when finished.

You may wish to store similar types of material together (e.g., all filmstrips in one cabinet and all videotapes in another). Or you may want to store material, in order, by competency number. For example, competency 114 might require the use of a slide/tape unit, a videotape, and a reference manual. All these resources could be kept in a small box marked "114," which could be stored in a cabinet or on a shelf between boxes 113 and 115.

Work stations. Some resource centers include areas—work stations—where students can actually practice performing competencies. Obviously, certain competencies lend themselves to being performed in a resource center better than others (especially if the resource center is in a classroom or library area).

Some competencies—such as *Compose a business letter; Calculate values of voltage, current, and resistance;* and *Troubleshoot amplifier circuits*—can be studied, practiced, and even tested in the resource center. Other competencies—such as *Service farm implements, Handcuff a suspect,* or *Give a razor shaping*—could be studied in the resource center but would have to be practiced and tested elsewhere.

Learning packages. Most resource centers used in CBE programs devote some area to the storage of modules, learning activity packages (LAPs), learning guides, or whatever type of learning package is being used. Such materials may be stored in a standard file cabinet, on a bookshelf, or in another appropriate location.

Other provisions. Typical resource centers may also include such areas, equipment, and materials as the following:

- An area where progress charts, competency records, or similar documents are filed
- An aide's desk or table
- A small conference area (e.g., an area with a few tables placed together) where small groups of students can assemble for discussions, with or without their instructor
- A chalkboard or flip chart an instructor can use in providing explanations to an individual or small group of students who may need some point clarified
- Reference books, manuals, magazines, journals, trade publications, encyclopedias, dictionaries, handbooks, and other printed materials students may need

Additional suggestions. You may wish to assign responsible students to serve as resource center aides, perhaps on a rotating basis (e.g., one student per day). These aides might be charged with helping students locate needed materials, setting up audiovisual equipment, maintaining order, checking selected self-checks using answer keys, and so on. If you are afraid of losing materials, you could have the aides check resource center materials in and out just as tools are.

If copyright laws permit, you may want to make a back-up copy of all tapes and slides and other media. Otherwise, if your only copy is lost or damaged, students will not have access to that resource until a replacement is obtained.

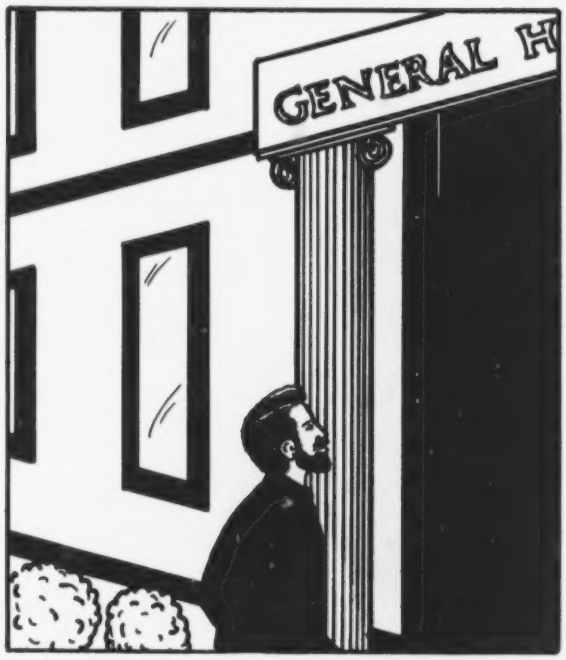
Two similar programs (such as diesel mechanics and auto mechanics) might wish to join forces to set up one resource center. That would free up one classroom for large-group instruction, a larger pool of resource center aides would be available, and better instructor supervision could be maintained. Furthermore, two program budgets can better support the purchase of projectors, carrels, and other equipment.

Providing Field-Based Learning Experiences

The need to expand your facilities through field-based learning experiences was discussed earlier in this information sheet. Some of the benefits of field-based learning experiences are as follows:

- By visiting the work setting (e.g., factory, business, hospital), students can see firsthand what the occupation is like.
- By going out into the field, students can talk directly to employers, workers, managers, former students, and others directly involved in the occupational area for which they are training.
- Early contact with the work environment can provide important motivation and career awareness for new students.
- Field-based learning activities can provide a vital link between the vocational-technical program and the world of work.
- Students can learn things that the regular institution-based program cannot provide because of a lack of equipment or space, or other factors.

Field-based activities can provide students with valuable learning experiences—whether students are enrolled in a CBE program or a more conventional program. Most vocational-technical teachers provide some field-based activities for their students (e.g., through field trips, clinical experiences, or cooperative education programs).



However, there are two basic differences between providing field-based activities in a CBE program and doing so in a conventional one. First, because students' individual rates of learning and varying career goals are accommodated in a CBE program, not all students will be working on the same competency at the same time. This greatly reduces the need to have the entire class involved in the same field-based learning experience at the same time. In a CBE program, you will be much more likely to provide students with individual field-based experiences.

Assume, for example, that student A is working on competencies relating to the skeletal system, and student B is working on the respiratory system. In that case, only student B is likely to benefit—at the present time—from a field trip to a hospital respiratory therapy program.

The second difference is that, in conventional programs, the tendency is to provide field trips and similar experiences as the opportunity arises. In a CBE program, field-based experiences are carefully selected, arranged, and scheduled as needed to help students attain the specific competencies upon which the program is based.

Types of Field-Based Experiences

In general, a field-based learning experience involves having one or more students visit a selected job site in the occupational area for which they are training. However, such experiences may be grouped into three general categories, depending on their primary purpose.

Motivational. The objective of some field-based experiences is to have the student return somewhat more excited about the occupation than before. Motivational field-based learning experiences should begin very early in the student's instructional program, perhaps during the first week or two. However, they may be repeated throughout the program, particularly if the program is a lengthy one.

Informational. This second type of field-based experience is designed to give the student additional information (e.g., background, technical, or other specific information) about one or more competencies in the program. For example, assume a student is working on the competency, *Tie various knots,* in a fire science program. That student might be required to arrange for a visit to a fire station to observe how the various knots described in the learning materials are actually used in rigging fire equipment.

Skill-building. The objective of this third type of field-based experience is for the student to actually learn how to perform a specific competency or competencies. Such an experience might be provided as a means for the student (1) to initially learn how to perform a skill, (2) to learn how to perform several variations of a skill already learned in school, or (3) to increase his/her speed and precision in performing a skill.

For example, three students might be sent to a golf course to actually learn how to *Mow and fertilize fairways.* Or the students could receive some initial instruction in this competency in the classroom or lab. Then, their actual practice of the competency and demonstration of final proficiency could occur out in the field (literally).

Of course, there may be other purposes for field-based experiences, but these three are very common in CBE programs. The following are examples of various learning activities that might be arranged to achieve one or more of these basic purposes:

- A student might accompany (or follow) a worker or team of workers to one or more job sites to become familiar with the setting for work.
- A student might "shadow" a worker throughout a typical workday or workweek, observing the actual work performed.
- You may arrange for a student to assume temporarily the role of a worker in the job setting.
- A student might be assigned to interview, question, administer a questionnaire to, or otherwise interact with workers on the job.
- A student might act as an observer to record and later analyze what took place on the job (e.g., interactions, tools used, mistakes made, safety violations observed, and so on).

The Planning of the Experiences

As you plan field-based learning experiences, you need to make sure that each experience serves a definite purpose. For each experience, you need to ask yourself what **specific** competency (or competencies) the experience relates to and **exactly** how the experience will help students achieve that competency.

In some cases, individual experiences will be tied to individual competencies. In other words, when a student is working on a particular competency, he or she will participate in a particular field-based experience.

In addition, however, field-based learning experiences can be used to help students "put all the pieces together." In other words, they can be used to give students a chance to apply, not individual competencies, but all the competencies in a major area.

For example, when a student completes all the specific competencies in the broad area of civil drafting, he or she could spend a two-week period at a civil engineering firm completing civil drawings. Then, when the student completes the major unit on pipe drafting, he or she could participate in another mini-internship with a plumbing contractor.

Furthermore, field-based experiences can be used as a means of providing open-exit opportunities for students who achieve all required program competencies early. This is a particularly useful option in institutions (e.g., at the secondary level) where open-exit is not actually possible, for whatever reasons.

For example, some institutions at the secondary level are reluctant to allow students to exit early because it would result in a loss of funding, since funding is often based on the number of students enrolled in the program. By placing students who do finish early into field-based experiences, in many states the vocational program can still receive funding for each student until the regular ending date for the program.

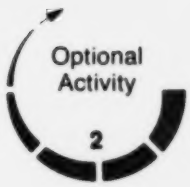
In addition to identifying the necessary field-based learning experiences, you need to develop directions describing how each experience is to be completed. Students need to know exactly what is to be accomplished during the experience. Are they to get a feel for the job, observe exotic production equipment in actual use, or become proficient in using a tool not available in the program?

Your directions might provide a step-by-step explanation of where students are to go and what they are to do. Or students might be directed to identify a suitable site and plan the details of the experience on their own.

Another task you must complete before implementing any field-based experiences is to contact each prospective site and arrange for the experiences to occur. If a particular site is reluctant to provide individual experiences, you might be able to arrange for students who are working on the same competency (at approximately the same time) to participate as a group.

You also need to make sure your field contacts know exactly what the purpose of each experience is. If you want a machinist to teach one of your students how to program a three-axis, numerical-controlled milling machine, you need to explain that fact—in writing.

And finally, you need to check all insurance, liability, and related regulations before sending students out for field-based experiences. You must ensure that you, your students, and your field contacts are all in compliance with all applicable rules, regulations, laws, policies, and other guidelines.



You may wish to view the following slide presentation: "The Resource Center Layout." This presentation was produced by Holland College, a postsecondary institution in Prince Edward Island, Canada. Holland College is considered by many to be one of the leaders in the contemporary CBE movement.

The slides illustrate well how this institution has set up its resource centers for each individual program. As you view the slides, look for specific ideas that you may be able to use in setting up a resource center for your own CBE program.

You may wish to visit an operating CBE program to observe how that program's resource center is set up. As you observe the resource center, you should look for answers to the following questions:

- Where is the resource center located in relation to the program(s) it serves?
- What equipment is located in the resource center (e.g., shelving, desks, carrels, storage, audiovisual equipment)?
- What system is used to control the materials located in the resource center?

The following case studies describe how several teachers organized their facilities and/or secured needed resources for their CBE program. Read each case study and **critique in writing** the performance of the teacher described. Use the question at the end of each case study to guide you in preparing your critique.

CASE STUDIES

Case Study 1:

Mr. Lee insisted, as he spoke to his supervisor, that his classroom and shop needed **no** reorganization now that the school was fully implementing CBE. He felt that the present arrangement of the learning environment would work as well for CBE as it had for the conventional, group-oriented approach all these years.

He argued that he could continue with his usual group approach to instruction because all students would be working on the same competency at the same time. They would have to be, because of the following factors, which were beyond his control:

- All his students would be beginning and ending the program at exactly the same time.
- They would all be following the same sequence of competencies, since they were highly sequential.
- Each student would need to achieve the same state-approved list of competencies.

What basic principle of competency-based education did Mr. Lee overlook that would probably require a change in the arrangement of the learning environment?

Case Study 2:

Ms. Gloria Simon, newly appointed director of a soon-to-be-built area vo-tech center, was enthusiastic about the competency-based approach to vocational education. Her goal was to operate all programs year-round on an open-entry/open-exit basis, taking in new students every Monday and having "graduation" for some students every Friday.

Plans for the new center were proceeding smoothly, except for one major problem. She was having constant run-ins with the traditional-thinking staff in the Facilities Planning Section of the state department of education. Specifically, there was disagreement about (1) the educational specifications for the "classroom" for each program and (2) the **number** and **selection** of tools and equipment for the programs.

What most likely was the major disagreement on these items?

Case Study 3:

Mr. Frankel had spent a great deal of time preparing a written proposal for modifying his classroom and lab for installing CBE. He was somewhat surprised when the proposal was returned to him to be reworked. The following comments had been written on the proposal by the occupational dean:

- "Mr. Frankel, I can't seem to visualize the changes you are proposing. I'm not even sure what your set-up looks like now."
- "Don't think we can afford to replace all your tables with fancy carrels."
- "Think you're doing too much, too fast."
- "Why change your layout to accommodate CBE before you have even changed your curriculum?"

What major flaws did Mr. Frankel's proposal probably have?

Case Study 4:

The auto mechanics faculty at Lake Valley Technical Institute had converted the classroom next to the shop into a CBE resource center. At the end of the year, the faculty met to identify the problem areas associated with the resource center so that they could be addressed the following year.

The four instructors reached consensus that the following were the most troublesome problems:

- Several slide/tapes had disappeared.
- When students had a question about something they were reading or viewing, they had to go out to the shop and hunt up an instructor.
- Since students viewed all audiovisual materials in the learning center, some students seemed to have difficulty remembering detailed steps in complex tasks between the time they viewed media in the center and the time they attempted the competency out in the shop.
- Some students indicated that they just didn't like working in the center because of all the noise and distractions. With several cassette tapes going at once and so much student movement in the center, they found it difficult to read or study.
- Students were constantly having to ask instructors how to locate a particular reference manual, slide/tape unit, or learning package.

What recommendations do you have for the auto mechanics faculty at Lake Valley Technical Institute?

Case Study 5:

Wanda Murphy had been criticized by her department chairperson for the way she was handling the field-based experiences in her CBE program. According to the chairperson, he was simply passing on all the complaints he had received.

Contact people in industry had complained that they weren't really sure what Wanda was after. They also claimed that the students had showed up for field assignments unprepared. Students, too, were griping about being sent on field assignments with little apparent rhyme or reason.

And finally, there had been a minor accident involving a student at a job site, and the company had claimed that they had no responsibility for providing reimbursement for medical care.

The mistakes Wanda Murphy has made in providing field-based experiences for her CBE program seem painfully clear. What, however, can she do to remedy the situation in the future?

Compare your written critiques of the teachers' performance with the model critiques given below. Your responses need not exactly duplicate the model responses; however, you should have covered the same **major** points.

MODEL CRITIQUES

Case Study 1:

Even given the fact that all students would begin and end at the same time and would master the same competencies in the same sequence, Mr. Lee's arguments do not hold up. Students would still need to be working on different competencies at any one point in time if Mr. Lee's program is truly competency-based.

One of the basic principles of CBE is that students must be allowed sufficient learning time to successfully achieve each competency before going on. If, therefore, Mr. Lee's students all begin at the same time and same place, they would soon be working on different competencies. This would necessitate a rearrangement of Mr. Lee's learning environment to better support individualized, self-paced instruction.

Case Study 2:

The state staff may be having trouble understanding and approving Ms. Simon's plans because the concepts and practices of CBE are new to them. Perhaps few CBE programs exist in the state, and probably the state's school facilities guidelines were written when conventional programs were the rule. Traditionally, school planners expect to see a classroom for every program, with room for 20–30 chairs facing a large chalkboard and screen at the front of the room.

In addition, state policies usually provide for the purchase of duplicate hand tools, instruments, training devices, and similar items so that each student can have his or her own. In many states, the purchase of tools and equipment is guided by an approved equipment list for each major program. Such a list may not include the items needed for the specific competencies identified for the programs in Ms. Simon's institution.

Ms. Simon and others like her are going to have to work cooperatively with state department personnel to ensure that they understand the needs of CBE programs. Over the long term, state and local policies must be changed to provide appropriate support for CBE. This cannot happen without the understanding and support of the appropriate decision makers at those levels.

Case Study 3:

Without seeing Mr. Frankel's proposal, we can't be sure of what problems it had. However, judging from the dean's comments, it looks as if the proposal had the following flaws.

Apparently, Mr. Frankel failed to include any drawings of the facility in the proposal. It would have undoubtedly helped the dean in reviewing the proposal to see detailed drawings illustrating (1) how the facility was arranged at present and (2) what it would look like when rearranged.

It sounds as if Mr. Frankel is not intending to use *any* of the existing tables for study stations, media viewing, or other purposes. In reality, existing furniture and equipment can often be modified to fit the demands of CBE, and other needed furnishings can often be constructed with very little expense. "Fancy" new carrels may not, in fact, be necessary.

It would appear that Mr. Frankel is asking for a number of substantive changes. Perhaps, therefore, it would have been better if he had arranged the proposed changes in several stages—some changes to be made now; and others, later.

Evidently, Mr. Frankel tackled the facility layout for CBE before he pinned down what specific competencies students would be achieving within that facility. It is hard to understand how he could expect to plan **appropriate** changes under those circumstances.

Case Study 4:

The principles of organizing the learning environment for CBE should have led you to make recommendations such as the following.

The faculty most likely lost several slide/tapes because of a lack of control. They could solve this

by assigning a student aide to the center each day. They could also have materials checked in and out of the room, or use some other system for monitoring who is using what materials and when.

Apparently, no instructor is assigned to be in the center at any one time. With four instructors in the program, one could be assigned to the resource center each day or week on a rotating basis. In that way, an instructor would always be readily available when students had questions or problems while working in the resource center.

There are some simple solutions to the problem of students who can't remember the material they have viewed in the center when it comes time to apply the material in the shop. Things can be arranged so that these students could practice the task right in the resource center. Or media for tasks that must be practiced in the shop could be viewed out in the shop area, at the same location where the task is to be practiced.

There should be a minimum of noise and distractions in the resource center. This would be possible if the center were run in a more controlled, business-like manner. Headphones should be acquired and their use required when students are listening to tapes. Partitions, portable walls, carrels, or other means of separating individual students or small groups of students would also help students' concentration.

Finally, a better method of labeling and storing learning materials is apparently needed. Students should not have to rely on the instructors to locate the materials they need to use. This is not an efficient use of either student time or instructor time. Nor is it likely to teach students to be responsible for their own learning—one goal of a CBE program. These instructors need to take another look at their resource center and determine how it can be better organized to facilitate **student** use.

Case Study 5:

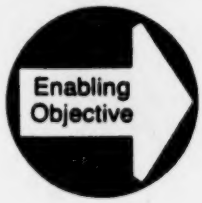
Obviously, Wanda Murphy violated many of the basic principles underlying the use of field-based experiences in CBE programs. She could, however, remedy her mistakes in the future by doing the following:

- Making it clear to field contacts exactly what the purpose of each field-based experience is
- Adequately preparing students with the prerequisite or background knowledge they need to be able to benefit from the field-based experience
- Providing directions for each field-based experience that clearly explain for the students the purpose of the experience
- Thoroughly checking all insurance, liability, and related regulations before sending students out on field-based experiences
- Ensuring that adequate insurance coverage is provided for each student through parents, school, company, or other source
- Carefully selecting field-based experiences so that each is clearly tied to the competency or competencies students are trying to achieve

Level of Performance: Your written critiques of the teachers' performance should have covered the same **major** points as the model critiques. If you missed some points or have questions about any additional points you made, review the material in the information sheet, Organizing the Learning Environment for CBE, pp. 8–24, or check with your resource person if necessary.

Learning Experience II

OVERVIEW



After completing the required reading, critique the performance of the teachers described in given case studies in establishing systems to administer their CBE programs.

You will be reading the information sheet, Systems to Administer Your CBE Program, pp. 32–54.

You will be reading the Case Studies, pp. 55–58, and critiquing the performance of the teachers described.

You will be evaluating your competency in critiquing the teachers' performance in establishing systems to administer their CBE programs by comparing your completed critiques with the Model Critiques, pp. 59–60.

Deciding what systems you will use to administer your CBE program is a key part of organizing your class and lab to install CBE. For information on the how's and why's of record keeping, grading, and admitting students into your CBE program, read the following information sheet.

SYSTEMS TO ADMINISTER YOUR CBE PROGRAM

When instructors teaching in conventional programs understand the essential elements and facilitating characteristics of CBE and move to install it in their own programs, they have some common concerns. If you spoke to some of these instructors, you might hear the following questions:

- How in the world am I going to keep up with all the paperwork involved in this kind of program?
- How am I going to assess students and assign grades? Can I follow my institution's policy and still conform to the CBE philosophy?
- How often will I be getting new students? And how many students will I be expected to enroll and teach in my program?

These are very real concerns. One thing to keep in mind is that your job of keeping records, assigning grades, and accommodating new students need not be any more difficult in a CBE program than in a conventional program—just different.

In conventional programs, record-keeping forms and systems are usually designed to suit the process of group instruction. Records are kept of all students participating in the same activity at the same time. Student assessment is often a matter of paper-and-pencil tests and norm-referenced grades. New students rarely enter except at the beginning of the year or term.

In CBE programs, however, records of student progress must allow for the fact that students will be engaged in different activities and working at varying rates. Assessment is much more often a matter of performance testing and criterion-referenced results. And, in open-entry/open-exit programs, students may enter or leave the program at almost any time.

Record Keeping in CBE

As an instructor in a CBE program, it is critical that you know at all times the status and progress of each student in the program. Yet the students in your CBE program will not necessarily all be working on the same competencies on any given day.

For example, different students may have different learning plans, based on their abilities and career goals. Some students with similar career goals may have past experience that allows them to test out on some of the competencies required. Students with similar learning plans may have entered the program at different points or may progress at different rates. It is critical that you document all this activity.

Thus, complete records of student achievement are required. Only with up-to-date and reliable information that is easy to locate and interpret can you make sound decisions about your students and their activities.

Purposes of Record Keeping

In a CBE program, records serve several purposes. They help you **plan** what a student is going to be doing. Next, they allow you to accurately **monitor** student progress through that work. They then often serve to **document** exactly what work a student has accomplished. Finally, they can **certify** a student's competence, letting others know what the student has learned.

Sometimes a single record-keeping form can serve more than one purpose, or separate forms may be developed for each purpose. Your main concern will be to develop and use forms that will work for you and your students in your local situation.

Your school or college may already have forms that you are required to use or that you elect to use.

There may be policy requirements concerning how records must be kept, even if no forms are provided. You will need to use your own judgment and knowledge of your situation in determining what forms to use for what purposes. Let's look a little more closely at the four purposes these records—whether separate or combined—must serve.

Planning student work. Planning students' work in conventional programs isn't too difficult because all students usually proceed as one large group. Some type of planning document shows what the class will be doing, and in what sequence. This might be a competency outline, course of study, or lesson plan book. The class might begin at the end of August with the first chapter in the textbook, for example, and finish—you hope—with the last chapter at the end of May.

In CBE, however, the focus is on the individual and not on the group. You must plan for what each individual student will be doing for the coming weeks or months. Each student's plan should be personalized to reflect his/her employment goal, instructional needs and abilities, learning style, and other factors. Clearly, conventional planning documents will not suffice in planning the work of individual students.

Sample 6 illustrates an individual student learning plan. This simple form is designed to be filled out (1) when a student enters the program and then (2) at the beginning of each subsequent month. It outlines the work the student is to attempt for the coming month and is then updated each time a competency is achieved. Such a form will allow you to personalize both the selection and the sequence of competencies, month by month, for each student.

Sample 7 presents a competency planning form. This form lists the number (or other code) of each competency in the program. By placing a dot in the box next to a competency number, you indicate that that competency is part of the student's program (i.e., is required of an entry-level worker in the student's chosen career). The key explains the meaning of other notations. These notations can be used to monitor and document the student's progress through the work outlined.

Sample 8 shows an excerpt from another type of planning form used in many schools and colleges. The competency profile graphically portrays the important skills of an entire occupation. Various codes can be used to indicate the competencies to be achieved, progress through those competencies, ratings for achievement of competencies, and so on.

Monitoring student work. Keeping track of where students are in the work they have planned allows you to ascertain whether expected progress is being made on a continuing basis. This information also allows you to have supplies and resources available when students need them, to schedule time for performance assessments, to arrange field-based activities, or to organize group work for certain activities.

The forms in the previous samples lend themselves to monitoring, as well as planning, student work. However, separate forms for monitoring student progress are also available.

Sample 9, for example, shows a computer printout form. This computer-generated form shows "standard progress" (i.e., the progress that a typical student is expected to make through a series of competencies) and a particular student's actual progress to date.

Please note that the ideas of "standard progress" and "typical student" are not quite in keeping with the principles of CBE. In CBE, remember, students are allowed to work at their own pace, and their progress is not measured against that of other students. However, also remember that such statements are usually qualified with the phrase, "within reason."

In other words, if students proceed at too slow a pace, it often indicates motivational or other problems (e.g., in their ability to complete a particular learning activity or in their ability to succeed, overall, in the program). Consequently, using such a form can help you to spot students who seem to be working at a significantly slower pace and to work closely with those students to identify—and solve—any learning problems.

Another possible form is the learning package checkout card shown in sample 10. Many CBE programs use some sort of learning packages to guide

student achievement of competencies. If the institution maintains ownership of the learning packages and simply checks them out to students working on specified competencies, such a form can be useful.

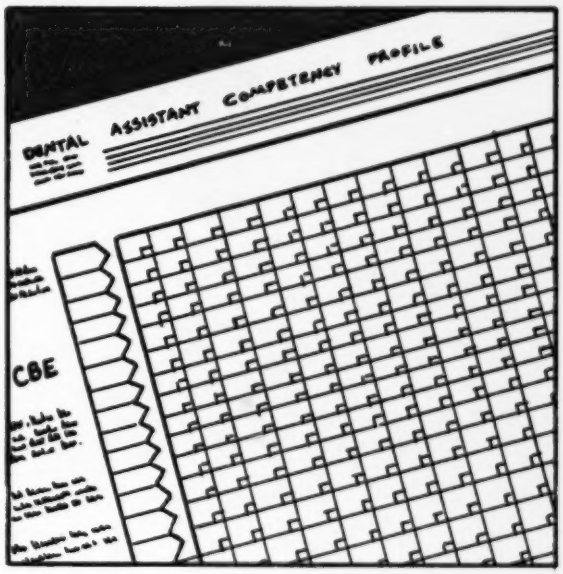
The checkout form serves two functions. It helps you maintain control of the instructional materials. And it allows you to keep tabs on which student is using which learning package each day. In this way, any special resources or equipment required for a particular learning package can be prepared so that students do not have to wait for them.

Documenting student work. Competency profiles, such as the one illustrated in sample 8, are frequently used to record the competencies each student has successfully achieved and the level of performance attained. As a student achieves each competency listed (or each competency in his/her learning plan), that fact is noted on his/her individual profile chart.

In some CBE programs, each competency is simply marked as "achieved" or "attained" (or some other appropriate notation). In other programs, a numerical or verbal rating is provided to show more precisely how well the competency was performed.

Certifying student competence. Some CBE programs have carried the documentation of competency achievement one step further. They include a record of the competencies a student has achieved on the back of, or attached to, the student's certificate or diploma.

There are a number of distinct benefits to this approach. A prospective employer can see exactly what competencies the student has achieved and, thereby, get a more accurate picture of what the student can do. Thus, the student is more likely to be placed into an appropriate position. Furthermore, with such a document available, the student might continue to add to the list of competencies achieved through on-the-job training. Samples 11–13 are examples of certificates used for this purpose.



SAMPLE 6

INDIVIDUAL STUDENT LEARNING PLAN

Student _____ Plan No. _____

Occupational Program _____ Date Developed _____

Objectives/Competencies	Expected Completion Date	Actual Completion Date
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Plan cooperatively developed and agreed to by:

_____ Student

_____ Instructor

SAMPLE 7

COMPETENCY PLANNING FORM

Student Marjorie Wilcox Student No. 609-42-1941

Address 1497 Ridgeway Drive Phone 227-1411

Date Entered 3/14 Date Exited _____ Absences _____

Program Data Processing

Occupational Goal Data Entry Operator

☒ 001	☒ 041	⊡ 081	⊡ 121	⊡ 161	☐ 201
☒ 002	◪ 042	⊡ 082	☐ 122	☐ 162	☐ 202
☒ 003	◪ 043	◪ 083	☐ 123	☐ 163	☐ 203
☒ 004	◪ 044	☐ 084	⊡ 124	☐ 164	⊡ 204
☒ 005	◪ 045	⊡ 085	☐ 125	☐ 165	⊡ 205
☒ 006	◪ 046	☐ 086	☐ 126	☐ 166	⊡ 206

☒ 040	⊡ 080	☐ 120	☐ 160	☐ 200	☐ 240

Key

- ☐ Task in the program (see list for tasks)
- ⊡ Task required for student's occupational goal
- ◪ Planned for mastery during next quinmester
- ☒ Mastered

SOURCE: Adapted from D.J. Pucel and W.C. Knaak, *Individualized Vocational and Technical Instruction* (Columbus, OH: Charles E. Merrill, 1974).

SAMPLE 8

PARTIAL COMPETENCY PROFILE

Legal Assistant

DUTIES	TASKS					
Assist Clients	Establish Firm/Client Rapport	Record Interview Data	Gather Information	Analyze Information	Inventory Assets and Liabilities	Assist in Establishing Record Keeping Procedures for Clients
Perform Communications Functions	Make Phone Calls	Arrange for Appointments and Meetings	Coordinate Meetings and Conferences	Consult with Officers of the Court	Consult with Administrative Agencies	Consult with Resource Persons
Implement Legal Procedures	Obtain Signatures	Perform Notary Services	File Pleadings and/or Documents	Lodge Pleadings and/or Documents	Record Instruments and/or Documents	Give Notices
Perform Investigative Functions	Obtain Reports	Conduct Nonlegal Research	Gather Physical Evidence	Locate Persons	Locate Properties	Interview Witnesses
Perform Legal Research	Retrieve Previously Researched Information	Use Library and Other Relevant Resources	Locate Relevant Statutory Law	Locate Relevant Administrative Law	Locate Relevant Municipal Ordinances	Locate Relevant Legislative Histories
Prepare Instruments and Documents	Research Form Files	Compile and Compute Data	Draft Instruments	Prepare Instruments	Draft Pleadings	Prepare Pleadings
Assist with Judicial and Administrative Appearances	Prepare Trial Notebooks	Prepare Case Law Notebooks	Organize Files	Schedule Witnesses	Subpoena Witnesses	Maintain Exhibit Indexes
Complete Client Projects	Conduct Real Estate Closings	Transfer Assets	Close Estates	Assist in Pursuit of Post-Trial Remedies	Complete Post-Trial Wrap-Ups	Collect and Return Exhibits
Continue Education	Participate in Educational Courses and Programs	Participate in Seminars, Conferences and Workshops	Complete Required Readings	Read Current Publications	Interact with Other Professionals	Participate in Professional Organizations
Coordinate Office Functions	Open Client Files	Maintain Office Equipment	Arrange for Maintenance of Office Equipment	Maintain Time Records	Update Library Materials	Maintain Form Files
	Develop Legal Procedures Handbook	Monitor Legal Procedures Handbook	Prepare Interoffice Memos	Recruit Potential Employees	Interview Potential Employees	Orient New Staff to Office Procedures

SOURCE: Adapted from a DACUM analysis conducted for Colorado State University, Department of Vocational Education, Curriculum Materials Service, Fort Collins, Colorado.

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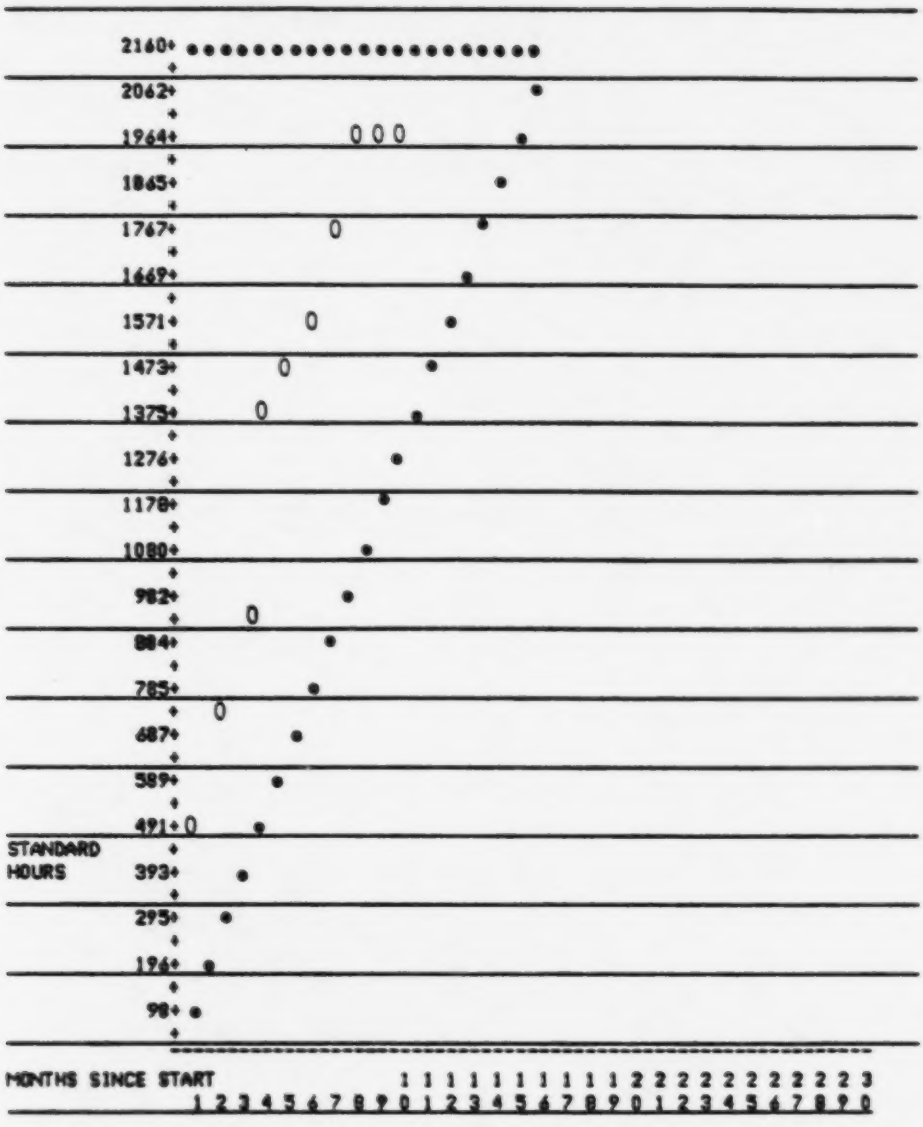
SAMPLE 9

COMPUTER PRINTOUT

KEY: Connect dots (•) for standard progress
Connect zeros (0) for your progress



SOURCE: 916 Area Vocational Technical Institute, White Bear Lake, Minnesota.

SAMPLE 10

LEARNING PACKAGE CHECKOUT CARD

Learning Package Checkout Card

Competency No.: E-19

Title: Administer CPR to Adult

Student	Out / In	Student	Out / In
J. Logan	9-2 / 9-6		
C. Lewis	9-8 / 9-11		
C.M.L.	9-11 / 9-13		
John L.	9-19 /		
	/		
	/		
	/		
	/		
	/		
	/		
	/		
	/		
	/		
	/		

SAMPLE 11

COMPETENCY CERTIFICATE A

RECORD OF ACHIEVEMENT

_____

attended a training program in

_____

for a period of _____ months ending _____

and was successful in achieving the occupational profile of

_____

REGISTRAR PRINCIPAL

holland college

School of Technology

SOURCE: Excerpted from a competency certificate produced by Holland College, Charlottetown, Prince Edward Island, Canada.

CARPENTRY

Name _____

4	C	CAN PERFORM THIS SKILL SATISFACTORILY AND CAN LEAD OTHERS IN PERFORMING IT.
	B	CAN PERFORM THIS SKILL SATISFACTORILY WITH INITIATIVE AND ADAPTABILITY TO SPECIAL PROBLEM SITUATIONS.
	A	CAN PERFORM THIS SKILL SATISFACTORILY WITH MORE THAN ACCEPTABLE SPEED AND QUALITY.
3		CAN PERFORM THIS SKILL SATISFACTORILY WITHOUT ASSISTANCE AND/OR SUPERVISION.
2		CAN PERFORM THIS SKILL SATISFACTORILY BUT REQUIRES PERIODIC ASSISTANCE AND/OR SUPERVISION.
1		CAN PERFORM SOME PARTS OF THIS SKILL SATISFACTORILY BUT REQUIRES ASSISTANCE AND/OR SUPERVISION TO PERFORM THE ENTIRE SKILL.

Ratings on the chart are based on industrial performance standards. They are confirmed by an instructor (a skilled and experienced person from the occupation) who views and evaluates performance as he/she would in the role of an employer or supervisor.

Instructor _____

Date _____

A letter of reference, attesting to the individual's attendance, punctuality, and work habits, is available from the Registrar's office.

Developed by Holland College, Department of Labour and the Department of Education in cooperation with business and industry.

Prince Edward Island January, 1978
© Holland College, 1978

Developing Personal Competence	Measure Accurately	Maintain Punctuality	Establish and Maintain Personal Tool Complement	Develop and Practice Safe Work Habits	Apply Basic First Aid	Organize and Maintain Work Area	Interpret and Apply Safety Rules and Regulations
Operating and Maintaining Tools and Equipment	Use and Maintain Hand Wrecking Tools	Select, Use and Maintain Handsaws	Select, Use and Maintain Measuring and Squaring Devices	Select, Use and Maintain Plumb Bobs and Levels	Operate, Use and Maintain Hand Boring Tools	Identify, Select and Use Fastening Tools	Select and Use Clamps and Vices
Identifying and Selecting Materials	Identify and Select Types and Grades of Plywood	Identify and Select Types and Grades of Framing Lumber	Identify and Select Siding and Wall Shingles	Identify and Select Roofing Materials	Identify and Select Nails, Screws and Bolts	Identify and Select Form Materials and Fasteners	Identify and Select Flashing Materials
Calculating Material Quantities	Calculate Quantities of Framing Materials	Calculate Quantities of Masonry Products	Calculate Quantities of Concrete	Calculate Quantities of Fill	Calculate Quantities of Interior Finish and Millwork	Calculate Quantities of Exterior Finish and Cladding	Estimate Small Job Costs
Site Layout and Preparation	Erect Safety Barricades	Plan Placement of Materials on Site	Construct Temporary Enclosures	Erect Batter Boards and Establish Building Lines	Locate Temporary Building and Services	Locate and Square Building on Lot	Establish Benchmark and Grade Levels
Form Construction and Concrete Placement	Strip, Clean and Store Form Work	Prepare Base for Concrete, Footings, Pads and Floors	Construct and Place Footing Forms	Select and Install Reinforcing Materials	Construct and Erect Wooden Wall Forms	Erect Steel Wall Forms	Install Sleeves for Services
Wood Structural Framing	Construct and Install Carrying Beams	Install Columns	Install Sills and Floor and Ceiling Joists	Install Bridging and Subflooring	Construct and Erect Walls	Apply Wall and Roof Sheathing	Install Prefab Trusses
Steel Construction	Lay out and Place Steel Joists and Bridging	Cut and Place Steel Floor Plans and Deck	Install Steel Carrying Beams and Columns	Lay out and Erect Metal Partitions	Install Metal Window and Door Frames	Assemble and Install Metal Shelving	Install Metal Siding and Insulation
Interior Finish and Millwork	Install Insulation and Vapor Barrier	Apply Plaster Lath and Grounds	Apply Gyproc	Cut and Install Metal Corner Beads and Mouldings	Cut and Install Flooring Underlay	Apply Wall Paneling	Strap and Install Ceiling Tiles
Exterior Finish and Cladding	Install Asphalt Shingles	Install Wood Shingles	Install Building Paper and Flashings	Cut and Install Corner Casings	Install Wood Siding	Install Metal Siding	Install Composition Sidings

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To the Employer

Holland College requires that all students assume responsibility for their own development. This approach is called Self Training and Evaluation Process (S.T.E.P.). Instruction is individualized and students are evaluated on how well they can perform specific skills.

Courses of study in various fields have been developed which permit the individual to become competent in the occupational areas within the field. The enclosed analysis was prepared by a group of people from the occupational field.

A "3" rating reflects the degree of competence normally associated with a skilled person who has been in the occupation for two to three years. The student completing a program at Holland College is expected to have the majority of ratings at the 1 and 2 levels.

Skills without ratings indicate that the student chose not to study the skill, possibly because there was no opportunity or the occupational profile did not require it.

Employers are asked to add and update skill ratings so that the individual will have, in this Record of Achievement, an ongoing description of his or her occupational development.

Post College Skill Achievement

Employer _____

Address _____

Length of Employment:

From _____ To _____

Position _____

Remarks

_____

Signature Date Title

Employer _____

Address _____

Length of Employment:

From _____ To _____

Position _____

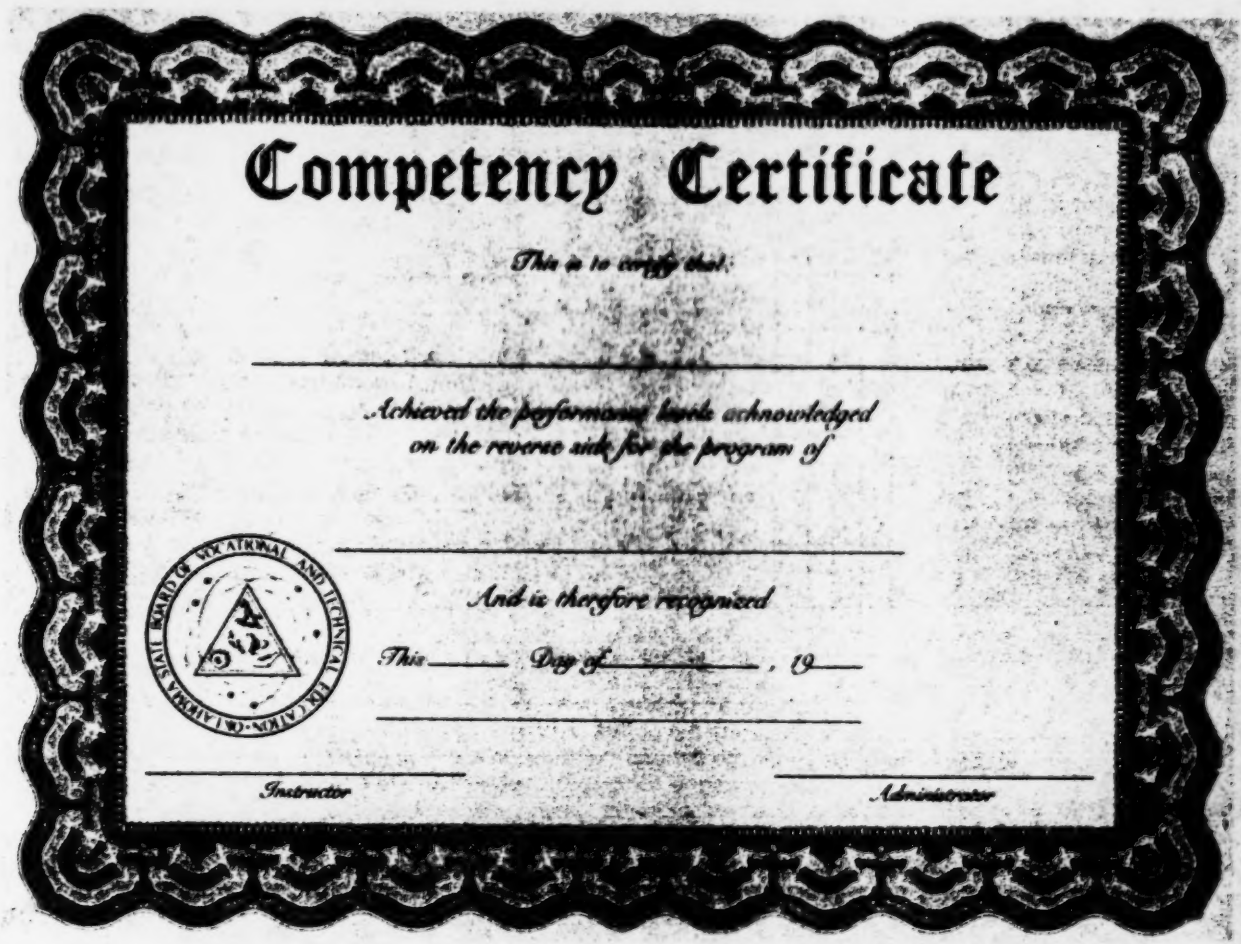
Remarks

_____

Signature Date Title

SAMPLE 12

COMPETENCY CERTIFICATE B



Competency Certificate

This is to certify that:

_____

Achieved the performance levels acknowledged on the reverse side for the program of

_____

And is therefore recognized

This ____ *Day of* _____, 19__

_____ _____

Instructor *Administrator*

SOURCE: Excerpted from a competency certificate produced by the Oklahoma State Department of Vocational Education, Stillwater, Oklahoma.

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MAJOR COMPETENCY AREAS

DIRECTIONS: Evaluate the Trainee using the rating scale below and check the appropriate number to indicate the degree of competency. The numerical ratings of 4, 3, 2 and 1 are not intended to represent the traditional school grading system of A, B, C and D. The descriptions associated with each of the numbers focus on level of student performance for each of the tasks listed below.

***RATING SCALE:** 4 - Skilled—can work independently with no supervision.
3 - Moderately Skilled—can perform job completely with limited supervision.
2 - Limited Skill—requires instruction and close supervision.
1 - No Exposure—no experience or knowledge in this area.

4	3	2	1	
				A. Orientation and Communication
				B. State Practice Act and Ethical Procedures
				C. Personal Health and Grooming
				D. Human Relations and Self-Improvement
				E. HOSA
				F. Parliamentary Procedure
				G. Nutrition As Applied to Dentistry and Digestion
				H. Circulatory and Respiratory Systems
				I. Senses, Nerves, and Anesthesia
				J. Skeletal System
				K. Muscular System
				L. Sinuses, Oral Cavity and Salivary Glands
				M. Histomorphology
				N. Microbiology and Sterilization
				O. Bacteriology, Dental Caries, and Oral Pathology

4	3	2	1	
				P. Applied Drugs
				Q. Emergencies
				R. Patient Education
				S. Introduction to Chairside Assistance
				T. Operative Dentistry
				U. Pedodontics
				V. Periodontics
				W. Endodontics
				X. Orthodontics
				Y. Oral Surgery
				Z. Prosthodontics
				AA. Radiation Safety
				BB. Roentgenology
				CC. Secretarial Practice
				DD. Business Procedures
				EE. Career Success

* Student ratings on specific competencies evaluated during the course are available upon student's written request and/or by calling the instructor. Parent's or guardian's signature is necessary if student is under 18 years of age.

92-000507

SAMPLE 13

COMPETENCY CERTIFICATE C

Student Competency Profile

Clerk-Typist (clerical)
203.362-010

Name Sherrill Hogueland

Instructor D. Smith

Program Office Training 140303

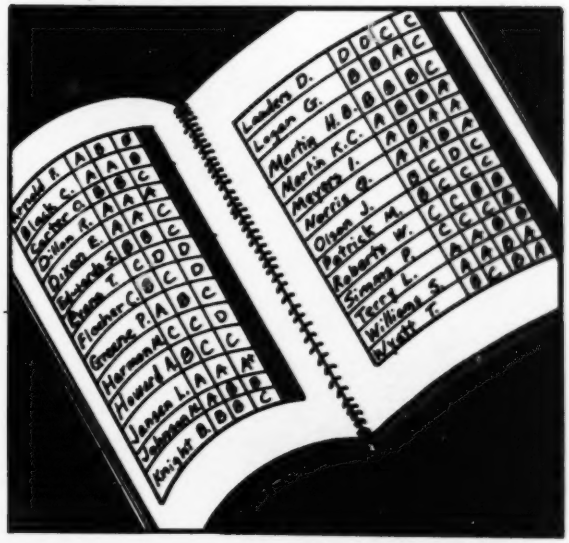
School Occupational Education Center

Date April 10, 1985

PERFORMANCE	020102 Use Telephone Service	020103 Receive/Place Calls	020301 Process Communications	030101 Type Arranged Bus. Letter	030102 Type Unarr. Bus. Letter	030103 Type 2-Pg. Unarr. Bus. Letter	030104 Type Memo—Unarr. Copy	030105 Type Memo—Handw. Copy	030106 Type Table—Arr. Copy	030107 Type Table—Handw.	030108 Type Manuscript	030109 Type Purchase Order	030110 Type Bill of Lading	030111 Type Invoice	050501 Select Duplication Process	085261 Elect. Print. Calculator
Outstanding																
Skilled	+	+	+	+					+		+	+	+	+	+	+
Satisfactory					+	+	+	+		+						
Satisfactory with Supervision																

SOURCE: Excerpted from a form developed by New York State's Instructional Support System for Occupational Education.

Grading in CBE



One aspect of installing CBE that proves troublesome in some institutions is the development of an appropriate grading system. Many proponents of CBE insist that the very concept of "grading" is at odds with the philosophy behind CBE. This may be theoretically true, but in practical terms, grading is often an integral part of schooling. In actual fact, it is the **conventional approach** to evaluating students and assigning grades that is really incompatible with CBE. Grading must be approached differently in a CBE program than in a more conventional one.

In conventional vocational-technical programs, evaluation and grading have generally been accomplished as follows. Students' work is evaluated regularly through paper-and-pencil measures (e.g., quizzes, exams, reports, completed worksheets), performance tests, and other devices (e.g., oral exams). After each evaluation, all students go on to the next activity regardless of the grade received. At the end of the grading period, all grades are averaged in some way, and the student receives a single grade for his or her total work for the period.

In conventional vocational-technical programs, evaluation and grading are norm-referenced. Students' achievement is compared to that of other students and rated accordingly. Test scores may be graded on a curve. Evaluation may be somewhat subjective when major exams involve essay-type items.

Yet the central idea underlying CBE is **competence**, and being competent is being able to do something and do it well. This shifts the emphasis, in CBE, from knowledge testing to performance testing. Testing mastery of facts, knowledge, concepts, principles, terminology—theory—still has a part in CBE. However, it takes a back seat to testing a student's ability to perform. Knowledge is, in reality, an enabler—something that helps the worker to perform.

Furthermore, what really matters in CBE is whether the student can measure up to the requirements of the occupation, not how well he or she compares with other students in the program. Consequently, evaluation is **criterion-referenced**; each student's performance is compared only to predetermined, fixed criteria—not to the peformance of the group. And the criteria used are the standards of performance expected of beginning workers in the occupation.

Finally, in CBE the goal is for students to work at their own pace until they have **successfully** achieved all the competencies in their program. Trying to arrive at a mean or average score or to place students' performance on a curve tends to ignore the nature of performance testing and CBE. If each competency counts and each must be performed successfully, then the system used to report achievement should reflect that fact.

Having said all that, one must also admit that the policies in many schools, particularly at the secondary level, require that final overall grades (e.g., *A, B, C, D, F*) be given each term. Thus, the task is to find a grading system that is compatible with both institutional policies and the principles of CBE.

Levels of Assessment

As you begin to develop a grading system for use in your CBE program, you need to keep in mind that you are dealing with **three levels** of student assessment. The problems involved in assessment at these levels are related, but not identical.

The first (and most objective) level of assessment occurs when an instructor uses a performance checklist to rate a student's performance against each of the **specific criteria** on the checklist. For the competency, *Make change*, for example, the checklist criteria might include items such as the following: *The student counted out coins first, then bills; The student called out the amounts to the customer;* and *The student thanked the customer.*

The instructor, typically, rates each criterion using a simple scale (e.g., yes/no, satisfactory/unsatisfactory, no/partial/full). Instructors usually have no trouble with this type of assessment. As experienced practitioners, they can spot the acceptable or unacceptable behavior easily.

The second level of assessment is somewhat more difficult to carry out. At this level, the instructor must assign a rating or grade for the entire competency, not simply the various parts or criteria. He/she must decide whether the **performance as a whole** meets occupational standards—or whether the student needs to recycle and complete additional activities to achieve competence.

Assessment at the second level may take several forms. It may take the form of a numeric rating (e.g., 1–5), a letter grade (*A–D*), or some other rating (e.g., mastery/nonmastery).

The highest level of assessment (and the one about which there is the most confusion) involves assigning grades for a **period of time** (e.g., a grading period of six weeks, a semester, or a year). Now the questions become more abstract: Is the overall quality of the student's work satisfactory or exceptional? Has the student accomplished a sufficient amount of learning? Are the desired attitudes being developed?

As mentioned previously, in many schools all this is summarized in a single grade (e.g., a letter grade or percentage). Most instructors in CBE programs must provide assessment data at the first and second levels; others must provide data at all three levels.

Rating of Individual Competencies

Let's look at some strategies for rating students' performance of individual competencies, using a criterion-referenced approach. Typically, you would first use written or oral tests to assess student mastery of the required knowledge. If the results of those tests were satisfactory, you would then use a performance test to assess the student's ability to perform the skill. Desirable attitudes might be assessed using rating scales, observations, anecdotal records, and other means.

Assume, then, that a student scores 94 percent on a written test, which allows him or her to move on to practice and to assessment of performance. The student then meets most of the criteria on the performance test at a satisfactory (or better) level. What **grade** should be assigned for that competency? There are two approaches.

Don't assign a grade at all. You could decide that any rating above a specified cutoff point would indicate that the student can perform the skill successfully, according to occupational standards. Any rating below that point would indicate that, at the present time, successful performance had not been achieved.

Although seemingly hard-hearted, this approach does have some merit. Using occupational criteria to measure competence means that all students must reach a specified **level of skill** in each competency in order to receive credit. When students receive credit, it is certified that they possess the required level of skill. And achieving competencies successfully can foster self-esteem and a positive attitude toward the program.

Students who do not earn credit on their first attempt would need to recycle through additional learning activities until they could perform the competency successfully—and receive credit. This, of course, demands extra time, effort, and motivation on their part.

There are, however, disadvantages to using this method. Since the only options are credit/no-credit or mastery/nonmastery, the "grade" cannot reflect the difference between successful performance and exceptional performance. Also important, a no-credit rating does not reflect how far from successful the student's performance was. (Was one small detail wrong, or the whole effort?)

Assign grades reflecting various levels of proficiency. For those competencies that can be assessed by paper-and-pencil methods, a grade of *A* might be awarded for a score of 95–100 percent, *B* for 90–94 percent, and so on. On a performance test, you could assign passing grades of *A, B,* and *C* to the numerical ratings (e.g., 3–5) that represent acceptable levels of performance. The different levels of proficiency must be determined in advance, of course, for each kind of testing.

For example, the Teacher Performance Assessment Form at the end of this module requires that you complete all applicable items at either the *good* or *excellent* level. For all who meet that established level of performance, a grade of *A* could be given to those who do an outstanding job (e.g., who receive all or a majority of *excellent* ratings). Students receiving all *good* ratings could be awarded a grade of B. Students not meeting the required level of performance, of course, would have to recycle until that level was attained.

This approach has its advantages. It is easy to average the grades earned on each competency to arrive at a grade for a time period (e.g., six weeks, term, year). Furthermore, you can recognize performance beyond the minimum level required. And finally, you can provide potential employers with more meaningful information about the student's skills for more appropriate job placement.

There may be disadvantages as well. Students and instructors may settle for minimum proficiency on each competency. Also, difficulties in learning might occur later if prerequisite competencies were achieved at only a minimum level. And if not carefully used, this approach could produce students who are marginally competent.

In spite of these disadvantages, grades reflecting various levels of proficiency are favored by many CBE personnel. These educators feel that the disadvantages are more apparent than real—easily avoided by careful implementation and appropriate student and teacher motivation. There are many such rating systems that you can use to reflect various levels of proficiency.

Use of a Descriptive Rating Scale

Many well-organized CBE programs have developed descriptive rating scales for use by the instructor in assessing a student's performance of a specified competency. Such a rating scale is easily understood by students, and it puts the assessment process on a much more objective basis. An example of a typical competency rating scale is shown in sample 14.

These rating scales are typically used as follows. First, the instructor observes the student's performance, rates it against the criteria on a performance checklist, and then makes a preliminary decision about the overall level achieved. In a postassessment conference, the instructor and the student discuss the performance and reach agreement concerning the rating.

Students who are not satisfied with the level of performance they have attained can continue learning and practicing the skill and, in a later reassessment, may achieve a higher rating. Conversely, if the instructor later observes the student doing a less expert job, he/she may lower the rating.

In terms of workers in an occupation, persons with mostly level 2 skills would need to be highly supervised. In appliance repair, for example, these people could be repair workers in a shop, installing new parts and cleaning the appliances. Those workers with mostly level 3 skills could be bench workers. They would require periodic supervision, and any repair service they completed would have to be checked by the supervisor.

The level 4 worker, on the other hand, could be entrusted to do complete service jobs on his/her own. And the level 5 worker would probably be the service supervisor or the person responsible for making house calls in a service truck.

Given the rating scale in sample 14, most students in an entry-level training program could be expected to achieve a majority of the competencies at the 2 or 3 level—and perhaps some at the 4 level. A few competencies on the list might be achieved at only the 1 level.

Very likely, no competencies would be achieved at the 5 level by the typical trainee, since this requires experience and successful practice in the occupation. Workers with considerable experience might perform a majority of skills at the 4 level, with some at level 5, and a few at level 3.

Remember, the rating numbers are simply identifiers for the descriptive phrases. They should not be equated with letter grades (*A–F*). In a typical program for entry-level workers, **most** students can probably be expected to perform **most** competencies at the 3 level. And these students would be achieving the entry-level skill desired. The 3 level does **not** equate to a *C* grade (average, mediocre, less than *A* or *B*) in a conventional program.

Grading of Progress through Time

As mentioned earlier, however you choose to rate individual competencies, you may still be required to assign periodic grades to document student progress through the program during a grading period. Letter grades may be required by institutional or district policies, student sponsoring agencies, or accrediting agencies. This is particularly likely at the secondary level.

One reason often given for requiring grades of this sort is "That's the way we've always done it." If such grades are required in your institution, you will need to devise a system for grading student progress periodically, while not undermining the basic concepts of CBE.

Incorporating the concept of **time** into a CBE program can be a thorny problem. In principle, students should be given the time they need in order to learn any competency; they should simply progress through the program at their own best rate. The ability to perform required occupational competencies should be the final standard.

Yet time is related to productivity, both in the vocational-technical program and in the occupation. Grades in school and employee ratings on the job usually include productivity as an essential factor. Students at all levels have long been accustomed to receiving grades that are at least partially based on the amount of work produced. Thus, it is difficult to avoid involving time, or speed of work, in assigning student grades.

However, it is important in a CBE program not to confuse the time taken to **learn** a skill with the speed at which the skill is ultimately **performed**. Many occupational tasks must be performed at a required

SAMPLE 14

PERFORMANCE RATING SCALE

	PERFORMANCE LEVELS
5	**Can perform this skill satisfactorily with initiative and adaptability to problem situations**
4	**Can perform this skill satisfactorily without assistance and/or supervision**
3	**Can perform this skill satisfactorily but requires periodic assistance and/or supervision**
2	**Can perform parts of this skill satisfactorily but requires considerable assistance and/or supervision**
1	**Has some knowledge about this skill but cannot perform the skill satisfactorily**

rate of speed, and students must finally be able to work at that rate. For example, occupational standards may require that a mechanic must be able to remove and replace an automobile engine in 90 minutes, a typist must be able to type 60 words a minute, a mason must be able to lay 1,000 bricks a day, and so on.

As long as a student can eventually perform at the required rate of speed, the length of time it takes the student to reach that standard is of little importance (within reason). Thus, policies that involve grading students on the speed at which they learn are inappropriate in CBE. With such policies, slower learners are always penalized; faster learners are always rewarded—despite the fact that all learners ultimately reach the same required performance standard.

The use of "standard hours" (see sample 9, p. 38) is an effective method for monitoring student progress and identifying students who may be experiencing difficulties. However, when "standard hours" are used as a means for determining grades, this tends to perpetuate the practice of penalizing slower learners and rewarding faster learners. This is essentially a norm-based approach, in which the achievement rate of one student is measured against the achievement rates of "typical" or "average" students in the past.

In a program that uses this approach, each competency is assigned a number of clock hours, based on data about how long students generally take to achieve that competency. A time-card system is then used to keep track of the time each student spends on the competency. Students who take longer to achieve the competency than the standard hours designated are penalized—their grades are lowered by the same percentage as the extra time they took.

Some institutions get around all this by avoiding giving letter grades at all. The majority of schools, however, must work out some kind of compromise between these conflicting grading principles and practices. Many instructors, administrators, and program planners have wrestled with this problem; few have been entirely satisfied with the results. Most often, their solution has been to use one of the following strategies:

- An average of the grades or ratings received by a student on all competencies achieved during the particular grading period is calculated. A grade is assigned on the basis of that average.
- The number of competencies achieved during a given grading period is calculated and a grade assigned on that basis. Each competency might be assigned a "standard time" that represents the average time previous students have actually taken to achieve the competency. Each student is held accountable for achieving a specific number of competencies, depending on the number of instructional hours in the grading period.
- The number or percentage of competencies achieved at various levels **higher** than the minimum level is figured and a grade assigned on that basis.
- The number of attempts it took the student to successfully perform each competency is calculated and used to assign a grade.
- A combination of competency achievement and periodic evaluation of certain student attitudes and behaviors (e.g., attendance, neatness) is considered as the basis for a grade.
- A combination of competency achievement and other specified activities (e.g., projects, live work, peer tutoring, cleanup) is used to determine a grade.
- Ratings of individual competencies achieved are simply reported. An entirely separate grade is given for the instructor's evaluation of a student's employability skills (e.g., cooperation, use of time, neatness, attitudes). For example, in any given grading period, a student may start out with 100 points for employability skills, with demerits given by the instructor when infractions are observed. The grade would be based on the final score.

Of course, each method has its advantages and disadvantages, just as the different approaches to rating competencies do. This is almost inevitable, since each of them is a compromise between the conflicting principles and practices discussed previously. The approach you finally settle on should have the following characteristics if it is to be consistent with the principles of CBE:

- Each student's grade should be determined by how he/she performs as compared to a predetermined, fixed set of standards. The standards should be based on those of the occupation, not on some contrived school requirements.
- Each student's relative performance should have absolutely no bearing on other students' grades. If all students meet the criteria and all are awarded a grade of *A*, there is nothing wrong with that.
- The time that it takes a student to learn a competency should not be given a heavy weight in computing grades. It is the final ability to perform the task, not the time it takes to learn it, that is important. A student who is slower to learn, yet competent, should not be given an automatic and heavy penalty.
- Each student should know, at the outset of each grading period, exactly what must be accomplished to earn an *A, C, S, U,* or any other grade.
- Grades should be based **primarily** (perhaps solely) on the student's ability to demonstrate achievement of important occupational skills in a job-like setting.

If your grading system conforms to these basic guidelines, the chances are good that it will be appropriate for use in your CBE program.

Students and Staff in CBE

Some additional management decisions will need to be made concerning how students will be "selected" for the program, when they will be allowed to enter and exit from the program, what teacher/student ratio should be maintained, and how you as an instructor can ensure that you are prepared to assist students in achieving the competencies identified for your program.

Student Selection Criteria

The question of what criteria should be used for selecting students for entry into a vocational-technical program is always a vexing one. On the one hand, selection criteria should be as low and unrestrictive as possible to allow all interested students—whatever their backgrounds and abilities—to take advantage of your program and acquire the training they need to get a job.

On the other hand, permitting students to enter your CBE program when there is little hope for their success can create an impossible teaching situation. As a result, you might have to devote an inordinate amount of time and effort to a few students, while perhaps neglecting the majority. In addition, students who spend weeks or months of time, only to fail to achieve or to complete the program, will not appreciate your policy. Neither, of course, will the local taxpayers or other students who may be waiting to enter the program.

It is typical of all teachers to want the brightest and best-prepared students in their classes. Instruction is easier, and results are more assured. This attitude tends to lead to unrealistic student selection criteria. For example, an air conditioning service instructor who declares that, "My students must be able to read at the 13th grade level," may not be looking at the situation clearly.

Does every air conditioning serviceperson presently employed in the occupation read at the 13th grade level? That is extremely doubtful. What the instructor is probably saying is that the textbook is written at that level, and he or she likes to teach from that text. The same kinds of restrictive criteria are often set for mathematical computation and other educational background requirements.

CBE makes it possible to analyze required selection criteria more clearly than in conventional programs because one has such straightforward competency statements to work from. Student selection criteria should be based on the kinds of prerequisite abilities, skills, and characteristics that are necessary to achieve the occupational competencies—**not** what the teacher may think is needed in order to pass the course.

Each competency in the list can be reviewed to determine the kinds of abilities and skills needed by the entering student if he/she is to become proficient in that competency. The next step is to decide what background or cognitive skills can reasonably be taught within the program itself. For example, in electronics, some related math skills can be taught or reviewed. In health occupations, it is expected that personal hygiene will be taught. And in the secretarial program, punctuation and English usage may be a part of the instructional program.

As you examine the competency list, it may occur to you that there should also be student selection criteria related to personal characteristics, such as sex, age, or physical stamina. Here you must be careful indeed not to specify criteria that create unwarranted barriers for prospective students. In today's social climate, there are very few criteria related to personal characteristics that can be justified—or that cannot be legally challenged.

In addition to determining student selection criteria for your own program, you may need to work with the administration to ensure that remedial instructional programs are available for prospective students who have academic deficiencies. The CBE approach allows remediation to be given in two ways. First, preentry remediation may be provided for students whose deficiencies are so severe that their basic skills must be improved before they can even be enrolled in the vocational-technical program.

Second, concurrent remediation may be provided. This latter approach deserves some special attention. As you sequence your occupational skills, you may be able to identify a group of competencies that could be accomplished by students with basic skills deficiencies. Students could start their vocational-technical training by working on these occupational skills and, at the same time, receive basic skills instruction in remedial classes. Thus, students can use the available time efficiently and maintain their occupational interest.

Open-entry/Open-exit

Often, CBE programs are set up to take in new students more frequently than conventional programs do. Conventional programs usually have fixed entry dates, such as the first day of the school year or the first day of each new term. However, CBE programs lend themselves to a more open approach. With an open-entry/open-exit approach, students can, in theory, enter and leave the program at any time.

An open-entry/open-exit approach offers some distinct advantages. Students may successfully complete the training program at various times throughout the year because they proceed from task to task at their own best rate. This approach generally serves student needs better. Anyone who has ever looked for a job during the first week of June knows that not all vacancies occur in the world of work at that time.

Likewise, with students leaving at various times, vacancies in the program are created almost at random. Consequently, interested prospective students may be somewhat more likely to enroll. (The student told to "come back next semester" may not do so.)

Since CBE programs often use self-contained learning materials for much of the routine instruction, new students can enter the program at almost any time with little or no concern about where the rest of the "group" is.

Furthermore, this open approach can allow better use of facilities, since dropouts, early leavers, and program completers can be replaced at once with new students. And finally, programs may operate more smoothly if there are always some advanced students around.

This does not mean that an open-entry/open-exit approach is critical to the success of CBE. In some settings, an open approach to accepting new students is difficult due to policy, legal requirements, tradition, and other factors. However, many CBE programs, especially at the secondary level, use a fixed-entry/fixed-exit approach and still maintain many of the advantages of CBE.

Even if all students have to begin and end the program at the same time, the program can still focus on the individual development of important occupational competencies. Instruction can still be time-variable. Students can still move from one task to the next, working at their own rate. And actual performance of each competency can still be required as the primary source of evidence in assessing student achievement.

Whether your institution uses an open or fixed approach will depend on various factors, some of them beyond your control. You might want to use a totally open approach but find it necessary to compromise because of these factors. One thought you should consider is that an open approach does not have to be **completely** open—some "open" is better than none.

For example, perhaps it is unrealistic in your situation to accept new students each and every day. You might, instead, be able to accept new students at the following times:

- On a designated day of the week or month (e.g., every Monday or the first Monday of every month)
- Whenever a vacancy (or a specified number of vacancies) occurs
- At the beginning of each new grading period
- According to the instructor's or department's option, up to a predetermined maximum number of students

You will need to use your own judgment and knowledge of your situation to arrive at the best solution for your CBE program.

Some programs, such as those in health occupations, may present special entry/exit concerns. These programs often include a required "clinical experience" that may have to be offered at specified times during the year. The classroom and lab phase of the program can still utilize an open-entry/open-exit approach, however.

There is one other aspect of open entry that needs to be discussed here because of its potential effect on program management: How do you orient students entering the program at many different times? As each student enters the program, he or she needs to meet with you to develop a learning plan; that takes time. Furthermore, the student needs to be appraised of how CBE works and what will be expected of him or her in the program; again, this takes time.

Management systems need to be devised to minimize the time required for such activities. For example, you might prepare a self-contained learning package (using the same format as the other program learning packages) to allow students to orient themselves to the program on an individualized basis. Media, too, may be developed to explain and illustrate the CBE program.

To help students develop their learning plans, you might design other individual activities through which they could tentatively describe their career goals and identify which program competencies they think they are presently skilled in and which they feel a need to develop. This preliminary work completed by each student could then serve as a basis for your planning conference with each student.

Teacher/Student Ratios

One concern frequently expressed by instructors implementing CBE concerns the number of students they will be expected to accommodate. Will there be more students than in a conventional program, fewer students, or the same number? The answer to this question will vary from one institution to another and may not be within your control.

However, if you have the opportunity to make recommendations concerning the preferred teacher/student ratio for your CBE program, you should keep in mind the following considerations:

- The initial development of a CBE program will require a great deal of time and effort on your part. If released time cannot be provided during this transition period, a ratio of fewer students per teacher may be appropriate.
- If the CBE program uses an open approach to accepting new students—enrolling new students frequently—the actual teacher/student ratio, at any one time, can remain the same. However, since more students will be enrolled throughout the course of the year, the net effect is a ratio of **more** students per teacher **over time**.
- Once the implementation phase of the CBE program has ended and all systems and resources are in place, many instructors believe that they can handle more students, more effectively, than in conventional programs. Hence, in the long run, the number of students per teacher may increase.
- CBE programs with more than one instructor may be able to accept more students per instructor more readily than programs with a single instructor. Instructors can arrange among themselves to specialize in certain areas of the program and can work very efficiently.
- If a "cost vs. benefits" approach is used, there is a sound argument for saying that an instructor in a CBE program with 15 students is carrying a load comparable to that of an instructor in a conventional program with 20 students. In the CBE program, vacancies can be promptly filled, thus keeping the program operating at designed capacity.

  Furthermore, students are very likely achieving more competencies at a higher level. And, a good CBE program usually has fewer dropouts, reducing the waste created by noncompleters.

- The number of students that any given instructor can handle is highly variable. It can vary depending on the occupation; the experience, temperament, and ability of the instructor; the degree of CBE implementation; the level of the students; and numerous other factors.

  It has been found, for example, that CBE programs that include a lot of machine drill (typing, for instance) can readily accommodate a higher teacher/student ratio than CBE programs that involve a lot of individual diagnosis and skills (e.g., watchmaking or dental laboratory work). Thus, the teacher/student ratio should usually not be standardized but determined on an individual basis instead.

Professional Development

Your present occupational skills may sometimes tend to define the limits of your program. It doesn't have to be that way. If you are unable to teach certain of the identified skills, you should take steps to improve your competence and correct the situation.

Again, the program competency list or chart has an interesting and perhaps unanticipated use. You can go through the list, examine each competency, and decide whether you are prepared to teach it. The CBE approach is demanding. The identified occupational competencies must be included and taught in the program. You are not permitted to modify the program to suit your own purposes.

You are not allowed to say, in effect, "I'm not too good in this skill, so I'll just give it a quick touch and then spend a lot more time on that other skill because I can handle it easily." To be honest with the students and the occupation, you must admit, "I see there are some skills on the chart that are going to give me trouble. I've got to get some experience and brush up on them, starting now."

The learning experiences might take any number of forms, of course. Summer employment in business or industry, "Return to Industry" programs, special industrial or business short courses, field trips, self-instruction, local workshops—these and other activities can provide the experience you need, not only to keep up-to-date, but to add needed additional technical skills to your repertoire. In planning for these activities, you need to keep the target skills clearly in mind so that the training leads to the specific desired results.

Your professional development needs should be integrated into the systematic staff development program of the institution. By working with the staff development coordinator, you can select the next technical skills to be learned, design and agree upon the activities to be completed, and draw up and sign a learning plan. After one segment of the plan has been completed, new competencies can be selected and the process repeated.

Learning additional technical skills should be on an equal basis with learning new teaching skills; both should be part of a continuing staff development program and should lead to the same rewards, primary of which is improved classroom performance.

The following case studies describe how five vocational teachers established systems to administer their CBE programs. Read each case study and **critique in writing** the performance of the teacher described. Specifically, you should explain (1) the strengths of the teacher's approach, (2) the weaknesses of the teacher's approach, and (3) how the teacher's performance could have been improved.

CASE STUDIES

Case Study 1:

The business education department was well on its way to implementing CBE in all courses. Overall, things were running smoothly. One area was causing great difficulties, however: record keeping.

At the beginning of each six-week grading period, all students were given copies of a printed form listing the competencies to be worked on during the six weeks. Logical enough, right?

However, some students were having difficulty completing all the competencies listed on the form in the time available. Other students finished early and wanted more. Still other students were constantly completing the competencies in some sequence other than that printed on the form. Finally, there seemed to be eternal confusion about which competencies each students had officially completed during the grading period.

Case Study 2:

Mr. Thomas thought he had a pretty good record-keeping system developed for his CBE program. However, he was intrigued by the results of a follow-up study he was doing on program dropouts.

Many of these former students reported that they had become frustrated after getting bogged down on learning packages—sometimes for days on end. One student reported having spent nearly four weeks on a learning package that students usually spent five days on.

The student had been reluctant to seek help and had made a point of looking busy. Consequently, Mr. Thomas had never realized the student was falling behind until it was too late and the frustrated student had dropped out of the program.

Case Study 3:

Mrs. Lewis, the radiology technician department chairperson at a local community college, was having trouble seeing eye to eye with her advisory committee. Although generally pleased with the quality of program graduates, the committee expressed concern about several students who had graduated since the program had shifted to CBE.

Their complaint was that these students, who were successful program completers, seemed extremely knowledgeable about the technical aspects of radiology but had difficulty in actually performing skills on the job.

"I don't see how that could be," replied Mrs. Lewis. "Each graduate has measured up to our very stringent CBE grading system. One-third comes from performance, one-third from theory, and one-third from work-related attitudes."

Case Study 4:

The four cosmetology instructors were worried about the grading system used in their program. Work on each competency was rated as *outstanding, good, fair* or *poor*. And students could go to any one of the four instructors to have their performance assessed. It was that latter procedure that was causing the problem.

It seemed that two of the instructors were constantly swamped with students asking to take performance tests. The other two instructors never, or rarely, got such requests.

The two swamped teachers, in fact, were often so busy that they didn't have time to go to the files to get copies of the appropriate criterion-referenced checklists for the performance assessments. In addition, the other two instructors felt that the "popular" two were much too easy in their ratings.

Case Study 5:

Ken Johnson, an instructor at an area vo-tech center, was upset. He had just talked to several other instructors in the lounge, and there seemed to be a revolt brewing.

There was one very specific complaint about the way CBE was being implemented at the center. The more Ken thought about it, the more he agreed that it was next to impossible to handle having new students arrive almost every day—right in the middle of everything else that was going on while they were trying to get CBE off the ground.

Compare your written critiques of the teachers' performance with the model critiques given below. Your responses need not exactly duplicate the model responses: however, you should have covered the same **major** points.

MODEL CRITIQUES

Case Study 1:

Although the faculty in the business education department probably had good intentions, their record-keeping system was lacking in several respects. Their first mistake was to print forms listing the competencies to be achieved during the six-week grading period. This is at odds with the principles undergirding CBE.

If different students work at different rates, how can they all be expected to achieve the same set of competencies during that time? And what about students with different career goals? Would students who want to be executive secretaries work on all the same competencies as those who wanted to be medical secretaries or receptionists? And what if new students entered the program at different times? Should they be held accountable for the same work as students who had a head start?

Then there is the question of the sequence of the competencies. Apparently students were expected to rigidly follow the sequence outlined on the form. It is hard to believe, however, that this sequence was necessary. Wouldn't there have been some competencies that could be learned in almost any sequence? This is true in most vocational programs, and it probably applies to business education as well.

Finally, an obvious problem was the fact that students' work was not documented. If there was ever any question about who had officially completed which competencies, the system had a hole in it somewhere. Perhaps there were no forms that could be used to record this necessary information. Or there may have been forms that, for one reason or another, went unused by the instructors in the program. It's hard to think of a good reason to justify this lack of foresight.

Overall, the business education department would have to get low marks for its performance. They should rethink both the systems they have developed and the way they use those systems. It is truly unfortunate that students should waste time and effort learning, when no one will ever know they did so.

Case Study 2:

Mr. Thomas seemed to be a concerned instructor. We can infer this from the fact that he was conducting a follow-up study of former students. He must have been interested in improving the effectiveness of his instruction.

It's a good thing, too—there seems to be some improving to do. From what we know, it's safe to say that he didn't have any way to monitor student work. The results of his follow-up study apparently came as a surprise to him. Worse than that, he never realized, while the students were in his program, that one of them was struggling for almost a whole month with a single learning package.

There are many systems Mr. Thomas could have used to monitor student work. He could have used learning package checkout forms to keep track of who was using which learning packages when. Such forms are easy to fill out and only need a little time each day to keep up-to-date. A progress chart for each student where he could post the dates of achievement for each competency would also have helped.

Had Mr. Thomas used one of these monitoring techniques and kept it current, he would have been able to spot the four-week problem early on and saved that student untold frustration. No wonder the poor student dropped out.

There are other forms and means he could have used to monitor student work. And Mr. Thomas should certainly move immediately to develop and use some such system to avoid future problems such as this.

Case Study 3:

Odds are that the advisory committee had good reason to be concerned about the quality of recent graduates of the radiology technician program. The grading system that Mrs. Lewis described is almost indefensible. It is very hard to understand why she would have given **equal** emphasis to performance, knowledge, and attitudes.

Certainly, in a highly technical field like radiology, knowledge is a must—there can be no question. Likewise, attitudes are important in any area. In a potentially dangerous area like radiology, certain attitudes would probably be vital to avoid injury to the worker, co-workers, and patients.

But the real proof of competence for radiology technicians, as for any other workers, is whether they can do the job. Knowing about how to do it is simply not the same thing. Unfortunately, the grading system Mrs. Lewis used took the emphasis away from performance of skills. In her system, performance was no more important than either knowledge or attitudes. She has violated one of the basic principles behind grading in a CBE program—that grades should be based primarily, if not solely, on performance.

Mrs. Lewis needs to revise her grading system as soon as possible. She needs to use, instead, a system that reflects students' actual competence—whether they can perform important occupational skills and, perhaps, exactly how well they can perform those skills. In that way, she can better ensure that graduates of her program will be well prepared for the occupations they are entering.

Case Study 4:

There is one large, glaring problem in the way performance of occupational competencies is rated in the cosmetology program. There seems to be little or no **consistency**. If students always try to get those two particular instructors to rate their performance, the other instructors may be quite correct in feeling that the "popular" instructors are too "easy."

Why else would they be so popular when it comes to rating time? On top of that, we know that the two popular instructors didn't always "have the time" to get the criterion-referenced checklists from the files.

Those two instructors may know their subject matter very well, but it's hard to believe that they have those checklists memorized. They were probably just "winging it." This is hardly a good approach to handling one of the most vital aspects of a CBE program: assessing student performance of occupational competencies.

The four cosmetology instructors should all sit down together, when they have plenty of time, and rethink their performance-rating system. Their four-point scale (outstanding, good, fair, poor) is probably acceptable. But they must devise a system that will get consistent results. Each instructor should be able to give exactly the same rating on a given student performance. None of them should be thought of as easier or harder than the others.

Once they have agreed on a system, they should be conscientious in using it. Lack of time should never again be put forward as a reason for doing a casual or haphazard job of performance assessment.

Case Study 5:

It is easy to sympathize with these instructors. They are up to their ears in work attempting to establish their CBE program—identifying competencies, determining program content, securing instructional materials, designing management procedures, and so on. If there is anything they don't need right now, it is new students appearing at their door on any day of the week.

They need to regroup a little. Ken and the other instructors should meet with their administration, describe the problems being caused by this very open kind of open-entry/open-exit system, and see if some modifications are in order. There is no need to **stop** accepting students in their CBE program, but it is possible to organize student enrollment in a way that will control the amount of extra work and yet fulfill the promise of easy access to students.

Some vo-tech centers have found that enrolling students on the first Monday of every month is very satisfactory. Others are able to accept students one day a week. Still others maintain a student waiting list and make special arrangements with the prospective student when an opening is available.

It is also a good idea to have developed a package of activities for new entrants so a good deal of the load is taken off the instructor. The student can view a slide/tape presentation giving an overview of the program, complete an introductory learning package, or participate in other planned individual activities.

In any case, however, a personal interview with the instructor is highly desirable, and this takes time. If instructors and administrators work together, they should be able to get a grip on this problem of open-entry.

Level of Performance: Your written critiques of the teachers' performance should have covered the same **major** points as the model critiques. If you missed some points or have questions about any additional points you made, review the material in the information sheet, Systems to Administer Your CBE Program, pp. 32–54, or check with your resource person if necessary.

Learning Experience III

OVERVIEW

Given the opportunity to observe and rate the physical and administrative aspects of a vocational program, develop a plan for making those aspects more compatible with a CBE approach.

You will be visiting a vocational program, and using the Vocational Program Checklist, pp. 63–64, to rate the physical and administrative aspects of that program.

You will be developing a plan for making the physical and administrative aspects of the program more compatible with a CBE approach.

Your competency in developing a plan for making the physical and administrative aspects of a vocational program more compatible with a CBE approach will be evaluated by your resource person, using the CBE Planning Checklist, pp. 65–66.

Arrange through your resource person to visit a vocational-technical program in your occupational specialty (or one closely related to it) and observe that program. The program you select should be one in which CBE has not yet been implemented. If you are an inservice teacher, you may complete this activity by reviewing your own instructional program.

During your observation visit, note the following aspects of the learning environment:

- Layout of equipment and fixtures
- Storage and retrieval of learning resources
- Use of field-based learning experiences

Also, note the following systems used to administer the program:

- Record keeping
- Grading
- Student entry

Using the Vocational Program Checklist, pp. 63–64, rate the learning environment and the administrative systems of the program.

VOCATIONAL PROGRAM CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

	LEVEL OF PERFORMANCE			
	N/A	No	Partial	Full
1. The classroom and lab are both fully utilized throughout the day and/or evening	☐	☐	☐	☐
2. The facility is organized for individual learning rather than group teaching	☐	☐	☐	☐
3. Most routine instruction is provided through resources other than the instructor	☐	☐	☐	☐
4. Students move about the facility freely as learning needs dictate	☐	☐	☐	☐
5. Each student has the opportunity to use needed equipment, tools, instruments	☐	☐	☐	☐
6. Learning stations are set up, containing all resources needed for a task	☐	☐	☐	☐
7. Learning resources were identified on the basis of identified program competencies	☐	☐	☐	☐
8. A suitable, specified area is set aside as a resource center	☐	☐	☐	☐
9. Resources are marked and stored for easy identification and use	☐	☐	☐	☐
10. Space is provided for simultaneous activities to occur without unnecessary distractions	☐	☐	☐	☐
11. Field-based learning experiences are geared to specific program competencies	☐	☐	☐	☐
12. A record-keeping system is in use to aid the instructor in:				
a. planning individual student work	☐	☐	☐	☐
b. monitoring individual student work	☐	☐	☐	☐
c. documenting individual student achievement of competencies	☐	☐	☐	☐
d. certifying individual student competence	☐	☐	☐	☐

	N/A	No	Partial	Full
13. The grading system in use:				
a. compares student performance to an occupational criterion level	☐	☐	☐	☐
b. is based primarily on student performance of important occupational competencies	☐	☐	☐	☐
c. reports student progress through time, if necessary	☐	☐	☐	☐
14. New students are accepted into the program at multiple appropriate points	☐	☐	☐	☐
15. A reasonable teacher/student ratio is maintained	☐	☐	☐	☐

Based on your ratings, develop a detailed plan for making each of the physical and administrative aspects of the program more compatible with a CBE approach. Your plan should include a sketch showing any proposed rearrangement of the physical layout. You may include drafts of any forms you suggest for record keeping, if you choose.

After you have developed your plan for making the physical and administrative aspects of a vocational program more compatible with a CBE approach, arrange to have your resource person review and evaluate your plan. Give him/her the CBE Planning Checklist, pp. 65–66, to use in evaluating your work.

CBE PLANNING CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

	LEVEL OF PERFORMANCE			
	N/A	No	Partial	Full
The planned facility rearrangement would provide for:				
1. full utilization of classroom and lab or shop	☐	☐	☐	☐
2. student movement based on learning needs	☐	☐	☐	☐
3. learning stations as needed	☐	☐	☐	☐
4. minimal structural alterations	☐	☐	☐	☐
5. mastery of related knowledge along with skills as appropriate	☐	☐	☐	☐
6. a variety of learning situations including individual, small-group, and large-group work	☐	☐	☐	☐
7. instructor supervision of all areas	☐	☐	☐	☐
8. maximum use of existing furniture and fixtures	☐	☐	☐	☐
The planned resource center would allow:				
9. minimum traveling from program	☐	☐	☐	☐
10. quiet work without distractions	☐	☐	☐	☐
11. secure storage of audiovisual equipment and materials	☐	☐	☐	☐
12. supervision by responsible personnel	☐	☐	☐	☐
13. efficient use of available space	☐	☐	☐	☐
14. adequate storage for program learning resources	☐	☐	☐	☐
15. permanent or semipermanent setup of frequently used audiovisual equipment	☐	☐	☐	☐
16. easy access to stored resources	☐	☐	☐	☐
17. space for appropriate small-group activities	☐	☐	☐	☐
Planned field-based learning experiences:				
18. were geared to specific program competencies	☐	☐	☐	☐
19. would provide appropriate information, motivation, and skill building	☐	☐	☐	☐

	N/A	No	Partial	Full
Planned record-keeping systems would allow for:				
20. planning individual student work	☐	☐	☐	
21. monitoring individual student work	☐	☐	☐	
22. documenting individual student work	☐	☐	☐	
23. certifying individual student achievement of occupational competencies	☐	☐	☐	
24. implementing the system efficiently	☐	☐	☐	
The planned grading system provides for:				
25. comparing student performance to a predetermined criterion level	☐	☐	☐	
26. making the system known to students in advance	☐	☐	☐	
27. placing primary emphasis on student performance of occupational competencies	☐	☐	☐	
28. applying grading and rating standards in a consistent manner	☐	☐	☐	
29. rating performance (e.g., using an established rating scale)	☐	☐	☐	
30. grading progress through time	☐	☐	☐	
The planned student entry system would allow for:				
31. accepting new students at appropriate times	☐	☐	☐	
32. maintaining a reasonable teacher/student ratio	☐	☐	☐	

Level of Performance: All items must receive N/A or FULL responses. If any item receives a NO or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

Learning Experience IV

FINAL EXPERIENCE

In an **actual teaching situation,*** organize your class and lab to install CBE.

As part of your teaching duties, organize your class and lab to install CBE. This will include—

- providing a physical layout conducive to CBE
- selecting and obtaining learning resources
- organizing field-based learning experiences
- developing record-keeping systems
- developing rating and grading systems
- developing systems for accepting students into the program

NOTE: Due to the nature of this experience, you will need to have access to an actual teaching situation over an extended period of time (e.g., one to three weeks).

As you perform each of the above activities, document your actions (in writing, on tape, through a log) for assessment purposes.

Arrange to have your resource person review any documentation you have compiled, including your plans for the physical layout of your facilities and the systems you have set up to administer the program. If possible, arrange to have your resource person visit and observe your facility.

Your total competency will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 69–71.

Based upon the criteria specified in this assessment instrument, your resource person will determine whether you are competent in organizing your class and lab to install CBE.

*For a definition of "actual teaching situation," see the inside back cover.

NOTES

TEACHER PERFORMANCE ASSESSMENT FORM

Organize Your Class and Lab to Install CBE (K-3)

Name _____

Date _____

Resource Person _____

Directions: Indicate the level of the teacher's accomplishment by placing an X in the appropriate box under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

	LEVEL OF PERFORMANCE					
	N/A	None	Poor	Fair	Good	Excellent
The physical layout was organized to:						
1. promote individualized learning rather than instructor-centered, group-paced instruction	☐	☐	☐	☐	☐	☐
2. allow full utilization of the classroom and lab	☐	☐	☐	☐	☐	☐
3. allow students to move quickly from mastering of related knowledge to applied, hands-on activities	☐	☐	☐	☐	☐	☐
4. allow efficient movement of students based on learning needs	☐	☐	☐	☐	☐	☐
5. allow easy access to and storage of learning resources required for program competencies	☐	☐	☐	☐	☐	☐
6. allow instructor supervision of student activities	☐	☐	☐	☐	☐	☐
7. use existing fixtures and furniture insofar as possible (e.g., through adaptation)	☐	☐	☐	☐	☐	☐
8. minimize the need for major structural changes	☐	☐	☐	☐	☐	☐
9. accommodate rearrangement in several steps, if necessary	☐	☐	☐	☐	☐	☐
A resource center was provided that:						
10. was located as close as possible to the program	☐	☐	☐	☐	☐	☐
11. allowed secure storage of equipment	☐	☐	☐	☐	☐	☐
12. allowed easy storage of and access to learning resources	☐	☐	☐	☐	☐	☐
13. provided areas where students could work quietly without distraction	☐	☐	☐	☐	☐	☐
14. allowed permanent or semipermanent setup of frequently used equipment	☐	☐	☐	☐	☐	☐
15. provided space for small-group work	☐	☐	☐	☐	☐	☐
16. was managed efficiently (e.g., with systems to control and monitor use of learning resources)	☐	☐	☐	☐	☐	☐

	N/A	None	Poor	Fair	Good	Excellent
The learning resources selected and obtained:						
17. were identified on the basis of important occupational competencies	☐	☐	☐	☐	☐	☐
18. were available in sufficient quantity to avoid unreasonable delay in student activities	☐	☐	☐	☐	☐	☐
19. were available in sufficient variety to support work on all program competencies	☐	☐	☐	☐	☐	☐
20. were not duplicated to an unnecessary extent	☐	☐	☐	☐	☐	☐
Field-based learning experiences were organized to:						
21. support mastery of specific program competencies	☐	☐	☐	☐	☐	☐
22. provide information, motivation, and skill-building activities	☐	☐	☐	☐	☐	☐
23. allow individual or small-group participation	☐	☐	☐	☐	☐	☐
24. meet all applicable policies, rules, regulations, and laws	☐	☐	☐	☐	☐	☐
The record-keeping system allowed the teacher to:						
25. plan individual student work	☐	☐	☐	☐	☐	☐
26. monitor individual student work	☐	☐	☐	☐	☐	☐
27. document individual student work	☐	☐	☐	☐	☐	☐
28. certify individual student achievement of important occupational competencies	☐	☐	☐	☐	☐	☐
29. implement the system efficiently	☐	☐	☐	☐	☐	☐
The rating and grading systems established:						
30. conformed to local policy and requirements	☐	☐	☐	☐	☐	☐
31. compared student performance to predetermined criterion levels	☐	☐	☐	☐	☐	☐
32. were made known to students in advance of testing	☐	☐	☐	☐	☐	☐
33. relied primarily on evaluation of student performance	☐	☐	☐	☐	☐	☐
34. allowed grading and rating standards to be applied in a consistent manner	☐	☐	☐	☐	☐	☐
35. allowed for rating individual competencies using established scales	☐	☐	☐	☐	☐	☐
36. allowed for grading of student progress through time	☐	☐	☐	☐	☐	☐
Administrators were provided with appropriate input concerning:						
37. points at which student could enter the CBE program	☐	☐	☐	☐	☐	☐
38. an appropriate teacher/student ratio for the CBE program	☐	☐	☐	☐	☐	☐

Level of Performance; All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

ABOUT USING THE NATIONAL CENTER'S PBTE MODULES

Organization

Each module is designed to help you gain competency in a particular skill area considered important to teaching success. A module is made up of a series of learning experiences, some providing background information, some providing practice experiences, and others combining these two functions. Completing these experiences should **enable** you to achieve the **terminal** objective in the final learning experience. The final experience in each module always requires you to demonstrate the skill in an actual teaching situation when you are an intern, a student teacher, an inservice teacher, or occupational trainer.

Procedures

Modules are designed to allow you to individualize your teacher education program. You need to take only those modules covering skills that you do not already possess. Similarly, you need not complete any learning experience within a module if you already have the skill needed to complete it. Therefore, before taking any module, you should carefully review (1) the introduction, (2) the objectives listed on p. 4, (3) the overviews preceding each learning experience, and (4) the final experience. After comparing your present needs and competencies with the information you have read in these sections, you should be ready to make one of the following decisions:

- That you do not have the competencies indicated and should complete the entire module
- That you are competent in one or more of the enabling objectives leading to the final learning experience and, thus, can omit those learning experiences
- That you are already competent in this area and are ready to complete the final learning experience in order to "test out"
- That the module is inappropriate to your needs at this time

When you are ready to complete the final learning experience **and** have access to an actual teaching situation, make the necessary arrangements with your resource person. If you do not complete the final experience successfully, meet with your resource person and arrange to (1) repeat the experience or (2) complete (or review) previous sections of the module or other related activities suggested by your resource person before attempting to repeat the final experience.

Options for recycling are also available in each of the learning experiences preceding the final experience. Any time you do not meet the minimum level of performance required to meet an objective, you and your resource person may meet to select activities to help you reach competency. This could involve (1) completing parts of the module previously skipped, (2) repeating activities, (3) reading supplementary resources or completing additional activities suggested by the resource person, (4) designing your own learning experience, or (5) completing some other activity suggested by you or your resource person.

Terminology

Actual Teaching Situation: A situation in which you are actually working with and responsible for teaching secondary or postsecondary vocational students or other occupational trainees. An intern, a student teacher, an inservice teacher, or other occupational trainer would be functioning in an actual teaching situation. If you do **not** have access to an actual teaching situation when you are taking the module, you can complete the module **up to** the final learning experience. You would then complete the final learning experience later (i.e., when you have access to an actual teaching situation).

Alternate Activity or Feedback: An item that may **substitute** for required items that, due to special circumstances, you are unable to complete.

Occupational Specialty: A specific area of preparation within a vocational service area (e.g., the service area Trade and Industrial Education includes occupational specialties such as automobile mechanics, welding, and electricity.

Optional Activity or Feedback: An item that is not required but that is designed to **supplement** and enrich the required items in a learning experience.

Resource Person: The person in charge of your educational program (e.g., the professor, instructor, administrator, instructional supervisor, cooperating/supervising/classroom teacher, or training supervisor who is guiding you in completing this module).

Student: The person who is receiving occupational instruction in a secondary, postsecondary, or other training program.

Vocational Service Area: A major vocational field: agricultural education, business and office education, marketing and distributive education, health occupations education, home economics education, industrial arts education, technical education, or trade and industrial education.

You or the Teacher/Instructor: The person who is completing the module.

Levels of Performance for Final Assessment

N/A: The criterion was not met because it was **not applicable** to the situation.

None: No attempt was made to meet the criterion, although it was relevant.

Poor: The teacher is unable to perform this skill or has only **very limited ability** to perform it.

Fair: The teacher is unable to perform this skill in an acceptable manner but has **some ability** to perform it.

Good: The teacher is able to perform this skill in an **effective** manner.

Excellent: The teacher is able to perform this skill in a **very effective** manner.

Titles of the National Center's Performance-Based Teacher Education Modules

Category A: Program Planning, Development, and Evaluation

A-1 Prepare for a Community Survey
A-2 Conduct a Community Survey
A-3 Report the Findings of a Community Survey
A-4 Organize an Occupational Advisory Committee
A-5 Maintain an Occupational Advisory Committee
A-6 Develop Program Goals and Objectives
A-7 Conduct an Occupational Analysis
A-8 Develop a Course of Study
A-9 Develop Long-Range Program Plans
A-10 Conduct a Student Follow-Up Study
A-11 Evaluate Your Vocational Program

Category B: Instructional Planning

B-1 Determine Needs and Interests of Students
B-2 Develop Student Performance Objectives
B-3 Develop a Unit of Instruction
B-4 Develop a Lesson Plan
B-5 Select Student Instructional Materials
B-6 Prepare Teacher-Made Instructional Materials

Category C: Instructional Execution

C-1 Direct Field Trips
C-2 Conduct Group Discussions, Panel Discussions, and Symposiums
C-3 Employ Brainstorming, Buzz Group, and Question Box Techniques
C-4 Direct Students in Instructing Other Students
C-5 Employ Simulation Techniques
C-6 Guide Student Study
C-7 Direct Student Laboratory Experience
C-8 Direct Students in Applying Problem-Solving Techniques
C-9 Employ the Project Method
C-10 Introduce a Lesson
C-11 Summarize a Lesson
C-12 Employ Oral Questioning Techniques
C-13 Employ Reinforcement Techniques
C-14 Provide Instruction for Slower and More Capable Learners
C-15 Present an Illustrated Talk
C-16 Demonstrate a Manipulative Skill
C-17 Demonstrate a Concept or Principle
C-18 Individualize Instruction
C-19 Employ the Team Teaching Approach
C-20 Use Subject Matter Experts to Present Information
C-21 Prepare Bulletin Boards and Exhibits
C-22 Present Information with Models, Real Objects, and Flannel Boards
C-23 Present Information with Overhead and Opaque Materials
C-24 Present Information with Filmstrips and Slides
C-25 Present Information with Films
C-26 Present Information with Audio Recordings
C-27 Present Information with Televised and Videotaped Materials
C-28 Employ Programmed Instruction
C-29 Present Information with the Chalkboard and Flip Chart
C-30 Provide for Students' Learning Styles

Category D: Instructional Evaluation

D-1 Establish Student Performance Criteria
D-2 Assess Student Performance: Knowledge
D-3 Assess Student Performance: Attitudes
D-4 Assess Student Performance: Skills
D-5 Determine Student Grades
D-6 Evaluate Your Instructional Effectiveness

Category E: Instructional Management

E-1 Project Instructional Resource Needs
E-2 Manage Your Budgeting and Reporting Responsibilities
E-3 Arrange for Improvement of Your Vocational Facilities
E-4 Maintain a Filing System
E-5 Provide for Student Safety
E-6 Provide for the First Aid Needs of Students
E-7 Assist Students in Developing Self-Discipline
E-8 Organize the Vocational Laboratory
E-9 Manage the Vocational Laboratory
E-10 Combat Problems of Student Chemical Use

Category F: Guidance

F-1 Gather Student Data Using Formal Data-Collection Techniques
F-2 Gather Student Data Through Personal Contacts
F-3 Use Conferences to Help Meet Student Needs
F-4 Provide Information on Educational and Career Opportunities
F-5 Assist Students in Applying for Employment or Further Education

Category G: School-Community Relations

G-1 Develop a School-Community Relations Plan for Your Vocational Program
G-2 Give Presentations to Promote Your Vocational Program
G-3 Develop Brochures to Promote Your Vocational Program
G-4 Prepare Displays to Promote Your Vocational Program
G-5 Prepare News Releases and Articles Concerning Your Vocational Program
G-6 Arrange for Television and Radio Presentations Concerning Your Vocational Program
G-7 Conduct an Open House
G-8 Work with Members of the Community
G-9 Work with State and Local Educators
G-10 Obtain Feedback about Your Vocational Program

Category H: Vocational Student Organization

H-1 Develop a Personal Philosophy Concerning Vocational Student Organizations
H-2 Establish a Vocational Student Organization
H-3 Prepare Vocational Student Organization Members for Leadership Roles
H-4 Assist Vocational Student Organization Members in Developing and Financing a Yearly Program of Activities
H-5 Supervise Activities of the Vocational Student Organization
H-6 Guide Participation in Vocational Student Organization Contests

Category I: Professional Role and Development

I-1 Keep Up to Date Professionally
I-2 Serve Your Teaching Profession
I-3 Develop an Active Personal Philosophy of Education
I-4 Serve the School and Community
I-5 Obtain a Suitable Teaching Position
I-6 Provide Laboratory Experiences for Prospective Teachers
I-7 Plan the Student Teaching Experience
I-8 Supervise Student Teachers

Category J: Coordination of Cooperative Education

J-1 Establish Guidelines for Your Cooperative Vocational Program
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J-3 Enroll Students in Your Co-Op Program
J-4 Secure Training Stations for Your Co-Op Program
J-5 Place Co-Op Students on the Job
J-6 Develop the Training Ability of On-the-Job Instructors
J-7 Coordinate On-the-Job Instruction
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J-10 Supervise an Employer-Employee Appreciation Event

Category K: Implementing Competency-Based Education (CBE)

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K-3 Organize Your Class and Lab to Install CBE
K-4 Provide Instructional Materials for CBE
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Category L: Serving Students with Special/Exceptional Needs

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L-9 Assess the Progress of Exceptional Students
L-10 Counsel Exceptional Students with Personal-Social Problems
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L-12 Prepare Exceptional Students for Employability
L-13 Promote Your Vocational Program with Exceptional Students

Category M: Assisting Students in Improving Their Basic Skills

M-1 Assist Students in Achieving Basic Reading Skills
M-2 Assist Students in Developing Technical Reading Skills
M-3 Assist Students in Improving Their Writing Skills
M-4 Assist Students in Improving Their Oral Communication Skills
M-5 Assist Students in Improving Their Math Skills
M-6 Assist Students in Improving Their Survival Skills

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